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Medical Times

A Monthly Journal of Medicine, Surgery, and the Collateral Sciences

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General Scientific

THE PHARMACOLOGY OF ALCOHOL.*

H. W. WILEY, M. D.,
Washington, D. C.

You may well ask why one who is not a professional pharmacologist chooses a theme of this kind. The answer is simple. Alcohol is an acknowledged poisonous substance producing intoxication, the symptoms of which are well known. Every observing citizen in the United States is more or less a pharmacologist in so far as alcohol is concerned. The specific effects upon blood pressure, the circulation, the nervous system, and the differences in effect of alcohol when introduced intravenously, subcutaneously, or through the stomach, have all been made special objects of study and the results of them are more or less well known. The mental effects of alcohol—that is, the symptomatology of mental manifestations under the influence of alcohol—are also phenomena which are of common knowledge.

The term "alcohol," when used without qualification, refers to the chemical substance known as ethyl hydrate, consisting of one molecule of ethyl, C_2H_5, combined with hydroxyl, OH. Alcohol in its pure state is colorless, of rather pleasant odor, volatile, and hydroscopic. Pure alcohol without a trace of water is most difficult of manufacture. The alcohol of commerce, known as neutral or velvet spirit, contains ninety-six per cent. of alcohol and about four per cent. of water. The various alcoholic beverages which are used by man contain alcohol in quite different quantities. Fermented milks, in which the fermentation is alcoholic, contain from one-half to two per cent. of alcohol. A light, so-called non-intoxicating beer contains less than two per cent. of alcohol. The ordinary beers of commerce contain from three to seven per cent. of alcohol. This includes all the varieties of beer, namely, ale, porter, stout, etc. Cider contains from a very small amount of alcohol, at the time fermentation begins, to five or six per cent. where the sugars in the apple juice have been abundant. Wines contain from six or seven per cent. of alcohol for the light wines to eleven or thirteen per cent. for the stronger wines and from fourteen to twenty-two per cent. for the so-called fortified wines. Distilled beverages vary in quantity of alcohol according to the revenue laws of the countries where they are made and the taste and financial ability of the consumer. Very cheap whiskies and brandies are adulterated with water so as to reduce their alcoholic strength, sometimes to as little as thirty per cent. On the other hand, whiskies and brandies which have been stored for a long time in a warm and dry locality increase their alcoholic strength until it reaches from fifty-five to sixty-five per cent., a strength which makes it impracticable to use as a beverage (without dilution) by persons not accustomed to liquors of a high alcoholic content.

Alcohol, except for experimental purposes, is never introduced into the system except through the stomach and skin. Generally the stomach absorbs very little of its contents into the blood stream. Even water is absorbed to a very slight degree by the coats of the stomach. On the other hand, alcohol is freely absorbed from the stomach. For this reason alcohol introduced into the stomach speedily finds its way into the blood and through the circulation to the various organs of the body. The moment the alcohol comes into contact with the cells of the body it produces poisonous or intoxicating effects. This is first indicated by a sense of elation or excitement, a false idea of well-being and of jollity in some cases, of anger and threats in others, speedily followed, when the dose is large, by loss of control of the voluntary muscles and of the organs of speech and a gradual insensibility lapsing into unconsciousness, and in fatal cases coma and death. The person suffering from alcoholic intoxication to a partial degree loses largely the sense of propriety and of moral obligation and responsibility. The sensations of intoxication are sufficiently agreeable to gain a strong foothold in the individual, gradually becoming a habit and finally reaching the state where the will of the patient is unable to control. In other words, alcohol as a beverage is one of the typical habit-forming drugs, and the tendency to increase the dose is manifested in this particular as it is in so many other cases of drug addiction.

Ethyl alcohol is a substance yielding a high calorific value when burned within or without the body. It has a calorific value, weight for weight, almost as great as fats or oils. Small quantities of alcohol, when taken into the stomach and introduced into the circulation, are burned in the tissues, producing an amount of heat equivalent to that which would be secured by burning

* Presented before the American Medical Society, for the Study of Alcohol and other narcotics. December 16th, 1916.

in a lamp or a furnace. The quantity of alcohol which could be disposed of in this way in twenty-four hours has been determined by Atwater and his co-workers to be about three ounces. It might be possible to introduce this quantity of alcohol per day in small quantities without producing any marked poisonous effects. Very often this amount of alcohol is taken at once, or at most in two or three frequently recurring doses. In such cases the toxic effects are necessarily well marked.

There is a difference in individuals regarding the toleration of alcoholic poisoning. Some persons normally possess a high resistance to alcohol, considerable quantities of which can be consumed without producing the ordinary evidences of intoxication. Others are peculiarly susceptible, so that a few drops of alcohol may produce intoxication. Toleration of alcoholic beverages increases with use, as is the case with most other toxic substances. One who has been a heavy drinker and has gradually attained to that unenviable dictinction may take an amount of alcohol within a day which would prove speedily fatal to those not accustomed to its use. The records of death by alcoholic poisoning are very common—I mean by this, as a direct toxic agent. The deaths caused incidentally by alcohol cannot be numerated with much exactness. In other words, where death has occurred prematurely the alcohol may be the apparent, though possibly not the real, cause; while in many instances it may be the real secondary cause without its being apparent. The students of mortality statistics are practically unanimous in their belief that the use of alcohol has a general tendency to shorten life, and thus it becomes at least a secondary cause of premature death.

Writers on toxicology devote a great deal of attention to the toxic effects of alcohol and there is no disagreement among them respecting this matter. In Wharton and Stillé's work on Jurisprudence, in Volume II, pages 447 and following, a general review of the toxic properties of alcohol is found, together with citations in regard to experimental researches thereon. In many respects the effects of alcohol on the organs of the body resemble to a certain extent strangulation. In cases of death from alcoholic poisoning the right side of the heart, the pulmonary arteries, and the systemic veins are loaded with blood, while the left cavities and the arterial system are comparatively empty, and the blood which they do contain is more like venous than arterial blood. In the brain the venous blood is collected in great quantities. The blood remains extremely fluid and is coagulated with difficulty. In cases of fatal alcoholic poisoning the coats of the stomach are usually found in a state resembling that of inflammation, the congestion of the blood vessels being well marked, especially those of the arterial system. This congestion is also found in the esophagus, in the mouth, and to a certain extent in the small intestine.

These conditions are also very much like those produced by irritant poisons such as arsenic, and this phenomenon has sometimes led to wrong diagnoses of the cause of death. In view of the fact that alcohol is readily absorbed from the stomach, it has been found in many cases of fatal poisoning that while little or no alcohol was found in the stomach large quantities of it were found in other organs of the body. The liver and the brain seem to retain the alcohol longer than the blood, the tissues, or other organs of the body, and it is particularly in the liver and the brain that alcohol works its most lasting injuries in case of chronic poisoning. There are certain diseases of the liver, such as cirrhosis, in which alcohol is held to be most causative, and its numbing effects on the brain are well authenticated. The fact above noted that the brain and the liver are most tenacious of the alcoholic content gives support to the contention of the special injurious effects of alcohol upon these organs.

Authors agree generally in the belief that the liver is especially the organ which is most seriously injured by alcoholic intoxication. Cirrhosis of the liver is not the only disease which may be induced by alcoholic intoxication. Various disorders are produced, according to the resistance of the individual and the extent and persistence of his habits in the consumption of alcohol. Beer and wine seem to be less destructive of liver tissues than the more concentrated distilled beverages. Fatty degeneration is one of the forms in which these bad effects are manifested. An excess of fat in the liver—that is, the condition known as fatty degeneration, is constantly noticed among persons who have used large quantities of alcohol, especially of the distilled beverages, for a long time. The liver is generally enlarged among all users of alcohol. As the fat becomes infiltrated in the tissues of the liver the quantity of blood therein is proportionately diminished and thus the fundamental activity of the liver injuriously disturbed. In fact, a fatty liver is much more common in drunkards than cirrhosis.

The heart of the user of alcohol does not escape its pernicious influence. Whether directly or indirectly is not so important as the fact that enlarged hearts are very common among those who are habitual users of alcohol. This enlargement of the heart is probably incidental, arising from the fact of the increased burden upon the arteries and the disturbing effects of the alcohol thereon, promoting the hardening of the coats of the arteries. As soon as the coats of the arteries become hard and inflexible the back pressure upon the heart is increased, with the natural result of heart pressure with the sequence of disorders which promote organic lesions of other descriptions leading sooner or later to fatal results.

The question naturally arises why it is that men of intelligence who must have knowledge of these serious lesions caused by the use of alcohol deliberately continue a habit which they are perfectly certain will shorten their days and make their active life less effective. The ignorant man who knows nothing of these matters may possibly be excused. There are conditions of life so hard that it is readily understood why some method of forgetting these hardships may be followed, but the case is different with those who know and understand. The man who is addicted to the use of alcoholic beverages is diminishing his opportunities for usefulness in life, closing avenues of employment, deadening the acuteness of his intellectual faculties, numbing the accuracy and value of his physical exertions, laying the foundations for diseased liver, heart, brain and arteries, and courting an early grave.

It seems to me that in this propaganda for reform and for the betterment of human conditions we should not fail to emphasize the ravages produced in an organism by the use of alcohol. The method in which it manifests its workings, the symptoms which attend its use, and the certain, although gradual, degradation of the vital organs, should be featured in a campaign to restrict the use of alcohol and to enlighten the people in regard to its dangers.

There is another effect of alcohol of very grave character which must not be forgotten. I have spoken of the hardening effect of alcohol on albuminous substances. If a solution be made of the white of an egg and alcohol added, with stirring, the mass will soon

become milky, opaque, and finally flocculent, showing the precipitation of the albuminous matter. The primordial cell, in other words the protoplasm, is largely composed of soluble protein—that is, albuminous material. The continued effect of alcohol, even in very dilute solution as it is in the blood in the case of moderate drinking, cannot fail in time to have its effect upon this cellular, limpid globule. Professor Minot has shown, in his epoch-making researches on old age, that the opaque and hardening cell is a concomitant, if not the cause of senility. If we could always keep the protoplasmic cells limpid, always keep the coats of our arteries flexible, youth might be prolonged to an almost interminable degree.

The effect of alcohol upon the germ cell and upon the embryo is quite as marked as it is upon the protoplasmic cell. A large amount of data has been collected on this point, and all pharmacological and experimental observations lead to the one result—that alcohol is a deadly poison to the germ cell and tends to change the embryo from a normal to an abnormal growth. The use of alcohol cannot fail to have a most disastrous effect upon progeny, and the data which are available indicate this to a most convincing degree. While the alcohol habit itself may not be inherited, especially if we admit that heredity is not influenced by acquired qualities, the degeneracy coming from the injured germ cell and the injured embryo does predispose to the acquirement of the alcoholic habit.

While people in good circumstances and in happy situations often acquire the alcoholic habit, it is found most conspicuous in those who by disappointment, failure, hardship, poverty or other disagreeable condition, are prone to mental suffering and seek in the alcoholic stimulus a relief from their misery. Thus all imperfect beings, naturally being less happily adapted to the environment than those of normal character, tend to relieve this discrimination which has been made against them by some method of forgetting it. Alcohol provides the quickest and the most effective method of this temporary relief from suffering. Thus the children of parents who are addicted to alcoholism are prone to be abnormal, predisposed to tuberculosis and cancer, and often are victims of epilepsy and mental derangement and inefficiency. In studying the effects of alcohol upon life processes this important feature of it should not be neglected.

In this general review of the effects, pharmacological and pathological, of alcohol on the human organism I desire to refer to one or two reviews of this subject in which the interested reader can find a more extended discussion of this problem. Dr. Knopf has contributed a very illuminating discussion of the subject in his Oration on Medicine delivered before the meeting of the Illinois State Medical Society, at Springfield, on May 13, 1912.[1]

In speaking of the remedy for the evils of alcoholism Dr. Knopf quotes other authorities and among them myself, as follows:

"In the last few years I have been so impressed with the evils of the excessive use of alcoholic beverages of all kinds that I feel at times as if universal prohibition could be nothing less than a blessing. At the same time I believe that the very moderate use of the very best old fermented and distilled beverages may be conducive to health and longevity if this use is not begun until the formative period of life is completed."

I do not recall the original publication from which this is quoted. I desire to add, however, at the present time, that I am no longer on the waiting list in so far as nation-wide prohibition is concerned. At the present time I am fully convinced that local prohibition by counties or by States will never prove effective as long as the traffic in alcoholic liquors is permitted in interstate commerce under the high protection of the laws of the United States of America. In order to render local prohibition prohibitive, nation-wide prohibition must be enacted. The effect of alcoholic beverages upon efficiency, which is really a pharmacological effect, has never been so well illustrated as at the present time. In the warring nations of Europe the necessity for national efficiency is supreme. To this end many of the nations engaged in this terrible conflict have abolished or restricted commerce in alcoholic beverages as a means of increasing the efficiency of the citizen at home or the soldier in the trenches. It is a pertinent question to inquire whether, if the maximum efficiency in the nation is desirable in time of war, it is not also equally desirable in time of peace? That nation has its maximum of efficiency in time of peace which restricts as completely as possible commerce in habit-forming drugs of all descriptions. Inasmuch as alcohol works the greatest havoc of all habit-forming drugs, its restriction would do most towards increasing national efficiency.

In a work lately issued, entitled "How to Live," by Dr. Fisk and Dr. Fisher, representing the Hygiene Reference Board of the Life Extension Institute, a notable section on alcohol, namely, Section IV, is inserted. The ravages of alcohol in parent and child are set forth in popular phrase and buttressed by reference to reliable data. Appended to this chapter is a number of references to the more important contributions on the subject by different investigators in all parts of the world. Especially is the section on the study of comparative mortality of paramount interest. If we accept as true the thesis that the desire for life is the dominant passion of humanity, we ought to play this ruling passion against the passion for drink as a means of effectually combatting it by appealing to the man's greatest desire. Drs. Fisk and Fisher have set forth in an illuminating manner this argument.

They very truly call attention to the fact that the statistics of life insurance companies are the most reliable data at hand for a really scientific study of the effect of alcohol upon longevity. The managers of our conservative life insurance companies are not in the business solely for philanthropy, but primarily for profit. In giving a certificate of insurance these companies are careful to study all the factors which may shorten life and thus increase the risk which they are taking. It is only natural that they should turn to alcohol as one of the forces which would tend to diminish the financial returns of life insurance. Dividing those addicted to the use of alcoholic beverages into several classes, the conclusions reached were as follows:

First. Those who were accepted as standard risks but who gave a history of occasional alcoholic excess in the past. The mortality in this group was 50 per cent. in excess of the mortality of insured lives in general, equivalent to a reduction of over four years in the average lifetime of the group.

Second. Individuals who took two glasses of beer, or a glass of whiskey, or their alcoholic equivalent, each day. In this group the mortality was 18 per cent. in excess of the average.

Third. Men who indulge more freely than the preceding group, but who were considered acceptable as standard insurance risks. In this group the mortality was 86 per cent. in excess of the average. In short, we find the following increase of mortality over the average death rate among insured risks generally:

Steady moderate drinkers, but accepted as standard risks	86 per cent.
Having past excesses	50 per cent.
Very moderate drinkers	18 per cent.

This means that steady drinkers who exceed two glasses of beer or one glass of whiskey daily are not, on the evidence,

[1] *The American Practitioner*, February, March and April, 1913, reprinted as a separate.

entitled to standard insurance, but should be charged a heavy extra premium.

In these groups, the death rates from Bright's disease, pneumonia and suicide were higher than the normal.

These authors also give numerous illustrations of the pharmacological and pathological effects of alcohol. It is evident from these data that the pharmacological effects of alcohol are not merely those which are visible under the knife or the microscope, but that there is a hidden, slow and certain degenerative influence exerted by alcohol even when used in moderate quantities, that has as its effect the shortening of human life. It is true that moderate quantities of pure, unadulterated and properly aged alcoholic beverages, such as wine, beer, whiskey and brandy, may be consumed for many years without any visible or apparent effect or without being able to discover by careful medical examination any degenerative effect, but the data of life insurance companies show that there is a higher mortality, a shorter expectation of life among such persons than is found among total abstainers.

The many experiments which have been carried on with students in colleges and universities clearly demonstrate that even the moderate use of alcoholic beverages tends to lower mental comprehension and activity and to produce a lower standard of scholarship. This statement perhaps seems strange when we recognize the fact that among the great scholars of the world the moderate and sometimes immoderate use of alcohol is not uncommonly found. But these men have reached this high standard in spite of this retarding influence, and it is not difficult to imagine to what greater heights of learning they would have attained had they practised abstinence.

As summarized by Fisk and Fisher, some of the less evident pharmacological effects of alcohol are as follows: First, small doses of alcoholic beverages impair memory, and Vogt has found by experimenting on his own person that as little a quantity as 15 c.c. of whiskey on an empty stomach, or 25 c.c. with food, effected a distinct lowering of the power to memorize. Second, alcohol is not a real brain stimulant, but apparently excites a flow of ideas by diminishing the power of control. Muscular activity at first is slightly increased under the influence of alcoholic stimulation, but eventually its efficiency is impaired. Experiments have shown that alcohol restricts the formation of antibodies and thus renders the person under its influence more sensitive to infection. Alcohol injected under the skin renders animals more sensitive to blood poison and pneumonia. Also it decreases the resistance to the ravages of tuberculosis.

Moderate doses of whiskey cause a negative result in the Wassermann reaction for syphilis. The tendency to reduce the number of red blood cells is marked. Alcohol does not act with any marked vigor, except in large quantities, upon the ability of the white blood cells to destroy intruding organisms, such as bacteria. On the heart and the circulation alcohol acts as a depressant. The rate of the heart beat is increased, but not its force. The general effect is to lower the blood pressure by paralysis of the nerve centers controlling the blood vessels. Alcohol increases the output of uric acid from the purine bodies from which it is derived, and for this reason its use should be looked upon with grave suspicion.

While alcohol passes quickly into the blood, as has already been recognized, it is not an ideal food substance to supply needed heat. A dilute solution of invert sugar will do this to a much safer degree. The action of alcohol in diminishing sensibility to pain is much the same as that of its derivatives, chloroform and ether. In fact, ether intoxication is now becoming in some quarters quite a habit. The deadly influence of alcohol upon germ cells, which has already been noted, may be continued through several generations. Thus not only do the parents who use alcohol threaten their own progeny, but their grandchildren and great grandchildren.

The most recent investigations of the pharmacological action of alcohol have added to our knowledge of its ravages. Hirsch[2] states that Dr. E. R. LeCount of Chicago has found constant alterations in the cortex of suprarenals in alcohol poisoning. The most important changes are the diminution of the yellow color of the cortex and reduction of the doubly refractive droplets of cholesterol. Kaiserling and Orgler, as far back as 1902, discovered the presence of liquid crystals or droplets in the cortex of the suprarenal glands. Nearly all investigators agree that these crystaloid particles are esters of cholesterol. The alcohol poison, in other words, tends to diminish the number of these droplets. In all these cases the heart action is weak and the blood pressure is abnormally low.

Steinebach[3] found that in delirium tremens when the pupils do not react to light, the pressure of the cerebrospinal fluid has been increased, either by edema or otherwise. If the liquid be drained through the cerebrospinal canal the patient's condition may be improved. Alcohol, therefore, seems to develop an increased cerebro-spinal pressure, doubtless due to edema. There seems to be a specific influence in alcoholic poisoning to develop this increased amount of cerebro-spinal fluid, and this edema may possibly be due to some particular toxin which has been developed as a result of the alcohol poisoning. This toxin is so threatening that it may develop serious meningitis.

The alcoholic wet brain has been studied also by Sceleth and Beifeld.[4] These observers study annually about 2,500 cases of alcohol poisoning. The longer alcohol is used, the more apt is delirium tremens to develop and the more frequently may the cerebral edema be expected to occur, which is probably associated with delirium tremens. The wet brain, or edematous brain, however, does not occur early in the history of the delirium, but late. Edema seems to follow the delirium and not to precede. It is, therefore, perhaps directly a result of the toxin of the alcohol. In the opinion of these observers it takes from seven to ten years to incubate delirium tremens. Another effect of the alcohol poisoning, according to these authors, is that the system becomes so thoroughly saturated with poisons that it is no longer capable of destroying the toxins induced and developed. This injury is perhaps largely due to the specific effect of alcohol upon the liver. Thus an additional charge must be made against alcohol, in that it so weakens the organism that the glands are no longer able to take care of the waste products—that is, they can no longer detoxicate these organs of excretion. Gastritis and vomiting are also important adjuncts in delirium tremens and are rarely absent, showing still further inroads upon the organs, due to the action of the alcohol.

The system of the alcoholic individual may be just on the point of delirium tremens for a long while, but some shock or injury may be necessary to bring on an attack. For instance, the advent of pneumonia or the breaking of a bone, or even a severe mental shock, is

[2] Hirsch, E. F., *Jour. A. M. A.*, Dec. 4, 1915, pages 2007-2008.
[3] Steinebach, R., *Jour. A. M. A.*, Dec. 4, 1915, page 2008.
[4] Sceleth, C. E. and Beifeld, A. F., *Jour. A. M. A.*, Dec. 4, 1915, pages 2008-2009.

very frequently the predisposing cause of delirium tremens. The average length of time that delirium tremens lasts is about five days. The symptoms of edema occur in about ten to fifteen per cent. of the cases. When cerebral edema or wet brain is found the delirium becomes of a low, muttering type, and is usually accompanied by a slight rise of temperature. The pulse becomes more rapid and weak, the tongue becomes coated, the breath foul, the teeth covered with cordes, and albumin often appears in the urine. In general all of the symptoms of pressure upon the brain are developed. In those cases where there is rigidity of the muscles, especially of the back of the neck, not due to the overdose of strychnin, which is often used as a remedy, the prognosis is bad. The pupils are usually small, equal, regular, responding sluggishly to light; they dilate somewhat if the patient can be aroused, narrowing down once more as he relapses into coma. In these severe cases of alcoholic poisoning acute meningitis may be developed, convulsions are likely to occur, with knee jerks, and apoplexy, cerebral embolism, and cerebral thrombosis are not unusual. In cases of recovery the edema of the brain lasts on an average about three weeks. Unfortunately the chances of recovery are not very great, as the mortality in such cases of delirium reaches the enormous figure of about seventy-five per cent. Death is generally hastened in such cases by the development of bronchial pneumonia. Cardiac failure, and denutrition from inability of the patient to take nourishment, are serious factors in the downward tendency of alcoholic edema of the brain.

Small doses of alcohol, according to Fischer, increase the urinary output[5]. This effect is probably brought about by favorable conditions for secretion that are induced in the kidneys when these are given plenty of oxygen while at the same time their carbonic acid is being rapidly carried away. Such conditions, according to Fischer, are brought about through the increased frequency of the heart beat, the more rapid breathing and the vasodilatation that are induced by small doses of these drugs. A large part of the diuretic action of caffein and its various derivatives, as well as of digitalis, can also be understood on this basis. According to this author, also, increased urinary secretion is due to the reduction of the water content of the colloid tissues of the body, this water being poured into the blood and secreted by the kidneys. It may be asked, if small doses of alcohol tend to reduce edema, why it is that persons suffering with delirium tremens have water on the brain? This is not due to the direct effect of the alcohol, but to the toxins developed through the poisonous action of the alcohol over a considerable period of time. A decreased capacity of the body colloids for holding water under small doses of alcohol is not incompatible with the brain edema due to its excessive use. While small doses of alcohol apparently increase the supply of oxygen to the kidneys, large doses, which act as poisons, or continued doses, which act as a slow poison, tend to prevent any excessive oxygen from reaching the kidneys, and thus interfere with the discharge of the edematous tissues. Among the poisons which thus interfere with the proper action of the kidneys and tend to produce edema Fischer enumerates metallic salts, such as those of arsenic, uranium, chromium and lead; alkaloids, such as morphin, cocain, veratrin and strychnin; anesthetics, such as alcohol, acetone, ether and chloroform.[6] Fischer also calls attention to the fact that some alcoholic beverages exercise a worse effect in nephritis than others. It is not the alcohol alone which is responsible for the bad effects of alcoholic beverages in kidney disease, but the acid effects which are produced, which, favoring the condition of acidosis, interfere markedly with the oxidations of the body by reducing the oxygen supply of the tissues.

The pharmacology of alcohol is intimately related to its psychology, and the psychological effects are quite as important from every point of view as the physical effects which are produced. This part of the theme has been admirably discussed by Dr. Tom A. Williams[7]. He presents the thesis that many of the manifestations of particular psychoses which are attributed to alcohol may in reality be laid to other causes; in other words, that the psychopathic state which is manifested in these symptoms is the cause of a drinker taking alcohol rather than the result, and he is of the opinion that the majority of persons who drink to excess do so because already psychopathic. In the case of those persons who take to alcohol as a means of relieving discontent and uncomfortable feelings, he is of the opinion that there may be bodily disorders, perturbations of the functions of the thyroid gland, or inadequacy of renal excretion, high blood pressure, or a general state of toxemia which leads to sleeplessness and the desire for alcoholic relief. Dr. Williams has also made a careful study into the causes which impel many victims to periodically debauch themselves with narcotics. He has investigated the nature of this impulse, its origin, and why it is so irresistible, and has appended to his paper valuable references.

Alcohol as a Food.

The interest in the consumption of alcoholic beverages is rapidly growing. A few years ago the prohibition sentiment of the country was regarded as the manifestation of a few extreme radicals, representing a propaganda which was not likely ever to become popular. The principal objection made to prohibition by those who believed in the restriction in the manufacture and sale of these beverages was that prohibition did not prohibit. It was said that a territory that was dry had secret methods of furnishing alcoholic beverages to those who desired them in a manner which rendered the consumption no less and which generated a habit of lawbreaking to such a degree as to be detrimental to the morale of the community. It is easy to see that in a restricted area of this kind the opportunities for illicit dealing are always abundant. If, however, the prohibition of the manufacture and sale of alcoholic beverages were universal, this objection would be removed.

For a time the supporters of the traffic in alcoholic beverages were consoled by the researches of Atwater and his co-laborers, showing that up to a certain point ingested alcohol is burned in the body with a creation of heat and energy to a degree exactly equivalent to the amount of heat generated by an equivalent amount of alcohol burned in an ordinary laboratory calorimeter. It was determined by these investigations that the average individual is capable of burning about three ounces of absolute alcohol per day, provided it is given in small intermittent doses. Beyond that the poisonous effects of the alcohol interfered to a certain degree with the metabolic burning and the excess of alcohol was carried by the circulation to the various tissues, producing the well-known phenomenon of alcoholic intoxication. No attempt was made in this experiment to ascertain whether or not the burden placed upon the body in burning and thus eliminating three ounces of poisonous material did not more than compensate for the amount

[5] Edema and Nephritis, page 318.
[6] Loc. Cit. Supra, page 426.

[7] "Alcoholic Psychosis and Psychopathic Drinkers," *The Lancet-Clinic*, October 17, 1914. "The Psychological Basis of Inebriety: Its Etiological and Social Factors; Remedies." Pamphlet, page 12. Washington, D. C.

of heat and energy secured. It is a well-established scientific principle that upon the ingestion of poisonous or ungrateful ingredients nature takes immediate steps to segregate and dissolve and remove the offending bodies. The energy required in this act varies with the magnitude of the operation, but always there is the expenditure of energy for this purpose. Hence the ingestion of such bodies is not only objectionable on account of their specific injurious effects, but also by reason of the increased burden which is placed upon the body in removing them.

In so far as I know there has been no attempt on the part of any scientific student of metabolism to claim any virtue as a food from the ingestion of alcohol. The fundamental reason or excuse for the use of alcoholic beverages lies rather in their supposed stimulating effect and their function in promoting conviviality. I should not forget, however, to mention that among many physicians, especially of the older type, there has been a distinct conviction that the moderate use of well-made, well-ripened alcoholic beverages, both distilled and undistilled, has a certain tonic effect and to this extent is useful. I am not prepared to deny that this contention has a basis of truth, but granting this effect does not by any means condone the general use of beverages of this character.

Alcohol and Industries.

The attitude of the various industries of the country towards the consumption of alcohol by their employees is one of interest. Some of the leading railroads many years ago, notably the Pennsylvania system, forbade the use of any kind of alcoholic beverages by their employees. This was followed somewhat tardily by forbidding the sale of alcoholic beverages in the dining cars of these roads. It was a startling anomaly to ride on a railway which forbade its employees to use wine, beer and whiskey, and to sit down in the dining car on the same road and be served as much as you liked of those forbidden beverages. The railroads of the country that served alcoholic beverages on their dining cars were placed in a delicate position. Under the system of local option which has been dominant in many of the States, a railway would run through a region part of which was dry and part wet. It was difficult, in a rapidly moving train, to say whether at any given time it was in wet or dry territory. Thus the sale of intoxicating beverages on such a train was likely at any moment to be illegal. To avoid any of these consequences the railways several years ago began to forbid the use or the sale of alcoholic beverages on trains running through states that were partly dry. Later on this principle was extended still further to forbid the sale of alcoholic beverages at all. The Pennsylvania Railway, I believe, was the first of the large roads to adopt this rule. This example has been followed now by many of the prominent railways of the country. During the month of November, 1915, all the principal railways centering in Chicago agreed to abolish the sale of alcoholic beverages on their lines. Thus not only are the employees of the road required to be teetotalers, but the travelers on the roads are placed in the same condition.

There is a growing disposition among the employers of labor to secure for their purposes only those who are total abstainers. In the last few years the propaganda in favor of the abolition of alcoholic beverages has grown with wonderful rapidity in the United States. The proportionate area which is now dry is of very considerable extent, and if to that is added the areas of local option, which are largely dry, it is seen that more than fifty per cent. of the area of the United States is now practically enforcing prohobition. Among the states which have adopted prohibition must be mentioned Maine, as one of the first and most consistent in the upholding of that principle. To the State of Maine may now be added Virginia, North Carolina, South Carolina, Georgia, Alabama, Tennessee, West Virginia, Colorado and Washington.

FACTORY LEGISLATION—ITS MEDICAL ASPECT.*

ABRAM I. ELKUS, L.L. B., D. C. L.
New York.

Former President Taft, in opening the Fifteenth International Congress on Hygiene and Demography at Washington two years ago, said:

"I do not doubt that we are beginning a new epoch in humanity's history in this country, in reforms looking to the bodily health of those less fortunately circumstanced in their life condition and work."

About 35,000,000 men, women and children are employed in industry in this country, whose every-day safety and health, whose lives, depend upon the character and scope of those laws which regulate their working conditions, and which are embraced under the general term of Factory Legislation or Social Legislation.

"The object of factory legislation is to maintain a healthy minimum in the standard of life; and to prevent any person being employed under conditions inimical to social health."—(Sidney Webb, in the Preface to a History of Factory Legislation, Hutchins and Harrison, p. xiv.)

The very basis of such legislation is health—the health of the individual, the health of society, and, perhaps most important, the health of posterity.

Whether, as the President has said, there is to be a new era of physical health and well-being for the great mass of our people, those who toil in our mills and mines, in our factories, workshops and other industrial establishments, to my mind depends in a substantial measure upon the interest that the medical profession, as such, will take in the near future in matters of factory legislation and regulation and social reform generally, upon the earnestness with which they will apply the principles of preventive medicine to conditions in the factory, the mill and the work-shop, and the extent to which they will co-operate with the law-makers in drafting social legislation that will meet the test of constitutional objections that are constantly being raised.

This active interest and co-operation will be in keeping with the noble traditions of the medical profession, for there is none closer to the mass of our people, more sympathetic to their needs, more desirous of their well-being, or better endowed with the power to make their lives healthier, happier and more useful to themselves and their dependents and to society as a whole. Factory legislation, or social legislation, is no new fad or fancy, no hysterical impulse of the moment, as some pretend to believe. In its present state it represents several centuries of progress and development, painfully slow in growth, and evolved out of the neglect and unnecessary sacrifice of hosts of toilers of past generations.

Children.

As was to be expected, the prevention of the exploitation of working children came first, and the medical profession was very active in that movement. What appears to be the earliest attempt of any public body to limit the hours of labor of children, is worthy of passing notice.

* Read before the Society of Medical Jurisprudence of New York.

In 1784, an infectious fever broke out in the cotton works at Radcliffe, England, which attracted attention to working children apprentices. Physicians of Manchester were requested to investigate. Drs. Percival and Ferriar, who made the investigation, did not limit themselves to the strictly medical problem, but in their report to the Magistrates describe the horrible working conditions of the child apprentices, their extreme youth and the shocking instances of overwork which were found. On this report the Magistrates of Manchester passed a resolution to the effect that in the future they would refuse to allow "indentures of parish apprentices, whereby they shall be bound to owners of cotton mills and other works, in which children are obliged to work in the night or more than 10 hours in the day."

In 1795, on a second investigation, the same physicians presented a series of recommendations for legislation to regulate the hours and supervise the conditions of work in factories that could well bear comparison with the laws as they existed in some of our own states not many years ago.

Yet there was nothing sensational about the report of these physicians. They made no appeal to humanitarian instincts. They reported the conditions they observed, and, as experts, declared them to be detrimental to health, and "advised inspection and control of factories as a necessary means of checking the ruinous waste of life and energy through disease," that they actually saw in existence.

It is in no way disparaging to those pioneers in a new field to refer to the dignified and conservative comment of one of these physicians on the practice of working children all night—"that such a practice cannot be consistent with health," and that he is "glad to find it does not prevail universally."

This was the germ of future factory legislation and it is a high tribute to the medical profession that two physicians were its inceptors.

There is another interesting incident that should be referred to. In 1801 a man named Jouvaux was tried and convicted of overworking his apprentices. In sentencing him to twelve months hard labor, Mr. Justice Grose said:

"Should the manufacturers insist that without these children they could not advantageously follow their trade, I should say that trade must not for the thirst of lucre be followed, but at once for the sake of society be abandoned."

One hundred and twelve years after this progressive utterance, in the year 1913, the New York State Factory Investigating Commission investigated the employment of young children in the canneries of the state of New York. Children as young as four and five years of age were found at work in the cannery sheds snipping beans. Children of tender years were found working long hours, often at night. In many cases the children were forced by their parents to work to eke out the small income derived by the latter from their cannery work. This shocking exploitation of childhood was sought to be defended by a few on the ground that the industry had to have the services of young children, and the Factory Commission had to repeat, over 100 years after Judge Grose's utterance:

"The employment of young children in the cannery sheds is an unnecessary evil. The industry can get along without it. Many of the canners themselves are opposed to such employment, and half of them do not resort to it to-day. In any event, the State of New York cannot countenance a plea by any industry that it is dependent for its prosperity upon the employment of young children."

In England it took twenty-five years of legislation and amendments to prohibit the employment of children under nine years, and limit the hours of those above nine to sixty-nine a week, and this law applied only to cotton mills.

Robert Owen, who was instrumental in securing the passage of this law in 1819, said that children were commonly employed at five or six, and instances were given by him of some working at three and four years. That need not be such a surprise, for 115 years later we had in this state not only cannery work of children four and five years of age, already referred to, but their work at manufacturing in tenements.

The investigators of the Factory Commission found that children as young as four years of age were at work in the tenement houses of the cities of the state during the day and often until late at night, engaged in such occupations as extracting nut meats, making artificial flowers, running ribbons in corset covers, extracting the bastings from trousers, and making certain kinds of candy, and similar work. In some cases, owing to the enforcement of the truancy laws, the children attended school. Then they were compelled to work before they went to school, during the noon recess, in the afternoon and at night. Children as young as six and seven years of age were produced before the Commission who said they were never allowed to go out in the day time except to go to and from school, in order that no daylight might be wasted in their work, but were allowed at times to go out at night. There was testimony as to one family, the children of which were never allowed to go out at all, not even to school, but were kept busily at work in their homes.

It must be borne in mind also that the conditions under which this work was being done were often of the most unsanitary character.

In 1844, after seventy years of persistent efforts, a law was enacted in England limiting the hours of labor of women and minors to ten hours a day, and even this statute was so worded as to be practically unenforceable. This was the first statute of its kind adopted in any country. From that time, there was enacted, step by step, the comprehensive system of factory supervision now in force in England.

In 1874 Massachusets limited the hours of labor of women, that being the first state in this country to enact any such measure. New York did not begin to see the necessity for such legislation until 1899. If the medical profession had taken the proper interest in this problem, it cannot be doubted but that this time would have been materially shortened and this country would have been at least on a parity with England and Germany in their comprehensive social legislation. It was essentially the problem of the medical profession, because the basis of all such legislation is the saving of the health of the individual, and, incidentally, that of society generally. It was only on the theory that they were health measures that they became constitutional measures.

In 1908, it was contended, and the Supreme Court of Illinois had previously decided, that a law limiting the hours of labor of women was not a health measure. Any court which dared to advance such a doctrine today would be an object of mockery. In the same year, the Supreme Court of the United States, in the well known case of Muller against the State of Oregon, decided that such measure was constitutional, basing its decision upon the opinions of physicians and experts which were submitted to it. The court in its opinion said:

"We held in Lochner v. New York, 198 U. S., 45, that a law providing that no laborer shall be required or permitted to work in bakeries more than sixty hours in a week, or ten hours in a day, was not as to men a legitimate exercise of the

police power of the State, but an unreasonable, unnecessary, and arbitrary interference with the right and liberty of the individual to contract in relation to his labor, and as such was in conflict with, and void under, the federal constitution. That decision is invoked by plaintiff in error as decisive of the question before us. But this assumes that the difference between the sexes does not justify a different rule respecting a restriction of the hours of labor (p. 419).

"Though limitations upon personal and contractual rights may be removed by legislation, there is that in her disposition and habits of life which will operate against a full assertion of those rights. She will still be where some legislation to protect her seems necessary to secure a real equality of right. Doubtless there are individual exceptions, and there are many respects in which she has an advantage over him; but looking at it from the viewpoint of the effort to maintain an independent position in life, she is not upon an equality. Differentiated by these matters from the other sex, she is properly placed in a class by herself, and legislation designed for her protection may be sustained, even when like legislation is not necessary for men and could not be sustained. It is impossible to close one's eyes to the fact that she still looks to her brother and depends upon him. Even though all restrictions on political, personal and contractual rights were taken away and she stood, so far as statutes are concerned, upon an absolutely equal plane with him, it would still be true that she is so constituted that she will rest upon and look to him for protection; that her physical structure and a proper discharge of her maternal functions—having in view not merely her own health but the well-being of the race—justify legislation to protect her from the greed as well as the passion of man. The limitation which this statute places upon her contractual powers, upon her right to agree with her employer as to the time she shall labor, are not imposed solely for her benefit, but also largely for the benefit of all. Many words cannot make this plainer. The two sexes differ in structure of body, in the functions to be performed by each, in the amount of physical strength, in the capacity for long-continued labor, particularly when done standing, the influence of vigorous health upon the future well-being of the race, the self-reliance which enables one to assert full rights, and in the capacity to maintain the struggle for subsistence. This difference justifies a difference in legislation and upholds that which is designed to compensate for some of the burdens which rest upon her." (p. 422.)

Night Work for Women.

In 1907 the Court of Appeals decided that a law was unconstitutional which prohibited the night work of women in factories. It said that such a law bore no reasonable relationship to health and interfered with the liberty of the individual woman to contract and sell her labor when and how she pleased. To be sure, in that case no medical or expert opinion in favor of such a statute was submitted to the court. The case was submitted on a naked presentation of the law itself and a technical violation, without any presentation of the facts which made the law a necessity.

In 1913 the Legislature enacted a similar statute, regulating the night work of women in factories, and when the case came before the Court of Appeals the court practically reversed its former decision and decided that such an act was not only constitutional but was typical of the highest kind of legislation for the benefit of women workers, and should be encouraged and fostered.

This case came before the Legislature with all the facts which made the law a necessity, and with the backing of the opinions of eminent members of the medical profession that the law was a health necessity for women. If it had not been that the physicians and surgeons had given their opinion that this measure was a health necessity, not only to save the health of those women workers of today, but because it affected posterity, it is doubtful if the court would have decided that the law was constitutional. An interesting extract of the the opinion of Judge Hiscock, of the Court of Appeals, fairly discloses this fact. Of course the court had the benefit of the investigation of the New York State Factory Investigating Commission. It had its knowledge, which had been gained by actual investigation and inspection, upon which this statute was based.

"Protection of the health of women is a subject of special concern to the State. However confident a great number of people may be that in many spheres of activity, including that of the administration of government, woman is the full equal of man, no one doubts that as regards bodily strength and endurance she is inferior and that her health in the field of physical labor must be specially guarded by the State if it is to be preserved and if she is to continue successfully and healthfully to discharge those peculiar duties which nature has imposed upon her. * * * Surely it is a matter of importance to the State that the health of thousands of women working in factories should be protected and safeguarded from any drain which can reasonably be avoided. This not only for their own sakes, but, as is and ought to be constantly and legitimately emphasized, for the sake of the children whom a great majority of them will be called on to bear and who will almost inevitably display in their deficiencies the unfortunate inheritance conferred upon them by physically broken-down mothers."

Manufacturing in Tenements.

The first attempt to regulate manufacturing in tenements in the State was the statute passed in 1884 forbidding the manufacture of cigars in tenement houses. The Court of Appeals of the State of New York, in the Jacobs case, declared this law to be unconstitutional, as interfering with the "liberty" clause. The court based its opinion largely upon the reports of the Board of Health of the City of New York, which had officially declared that "the health of the tenement population is not jeopardized by the manufacture of cigars in those houses; that this bill is not a sanitary measure and has not been approved by the board." The Factory Commission investigated manufacturing in tenement houses and recommended a law prohibiting the manufacture in tenements of food products and of infants' or children's wearing apparel and dolls and dolls' clothing. This law was unanimously sustained by the Appellate Division and the appeal to the Court of Appeals abandoned.

Reference is made to this case, as to the Lochner case, in the United States Supreme Court (which decided against the constitutionality of the law regulating the hours of bakers), because the courts invariably based their decisions as to whether or not the law was constitutional as a health measure, upon the testimony or opinions of physicians. If physicians find that the practices which are sought to be prohibited are detrimental to the health of the individuals concerned, almost invariably the courts will stand behind them by declaring that the measure is constitutional and that the law should remain upon the statute books.

A case strongly illustrative of this is that of State vs. Bimberg (71 Oregon, 259), the Oregon ten-hour law for males. This case is now before the United States Supreme Court for decision. In Oregon the highest court there said:

"A certain minimum of physical well-being is necessary in order that social life may exist, the usefulness and intelligence of the citizens be increased and the progress of civilization accelerated. It is an undeniable fact that prolonged and excessive physical labor is performed at the expense of the mental powers, and it requires no argument to show that a man who day in and day out labors more than ten hours, not only deteriorates physically but mentally."

There is no doubt but that the Supreme Court of the United States will consider whether or not it will reverse its own decision in the Lochner case, to which I have referred, largely upon what the medical profession has set before the court in the Oregon case.

It will thus be seen that there is a great obligation and duty resting upon the medical profession in reference to legislation of this kind. The whole question as to whether hours of labor, however long, are to be regulated by legislatures, because of the danger to the health and life of those concerned, rests with the medi-

cal profession. If they believe—as most of them concededly do—that lengthy hours of labor destroy the health not only of the one directly concerned, but of those who are his children and his children's children, then the obligation rests upon them to come bravely forward and assume the burden which is theirs, of telling the courts the facts which their education, their training and their experience teaches them, and thus save to the country the lives of those concerned.

While the great number of physicians are conscientious and honest in the performance of this duty when called upon to discharge it, it is to be regretted that physicians are still to be found who will take the same attitude as did those physicians in England when the question of limiting the hours of child labor was concerned—that it was a good thing to work long hours of the day and night. We found recently, when the question of employing women in the canneries for very long hours was concerned, that physicians were willing to certify—not testify—that in their opinion such long hours were not hurtful. They would not appear and testify because they would have to be cross-examined.

There is an enormous field, which is still growing, for preventive medicine, in which there is much that can be done to prevent unnecessary waste of life and health. Statistics might be quoted to show the enormous morbidity of factory workers and those who work in industrial establishments, which could be largely diminished by regulation and supervision.

In a recent bulletin of the Federal Department of Labor, on employment of women in retail shops in Boston (January, 1916, No. 182) out of 1,156 women whose histories were studied for a year there were 911, or 78.8 per cent., who reported absent from duty because of illness. Even more impressive is the average of 2.5 weeks duration.

It is impossible to determine just what percentage of this illness is due to working conditions, but it is clear that if seats were provided and permitted to be used to avoid the strain of continuous standing, if proper ventilation, heating and lighting were provided, if rest periods were allowed, and an amount paid to sufficiently support life, there would be a marked decrease in this morbidity.

Then there is the problem of industrial poisoning, the prevention of industrial diseases, such as arsenical and lead poisoning, which present a great field for study by the medical profession, and for action upon their part based upon such studies.

In this country we have merely commenced to attack this problem. The pioneer work of such physicians as Dr. W. Gilman Thompson, of New York, and Dr. Alice Hamilton, of Chicago, have done much; but much remains to be done in this sphere of preventive medicine. In nearly every case it is demonstrated that if proper precautions had been taken there would be little or no illness.

Another problem for the medical profession in the same line is that of the removal of dust and fumes, which contribute largely to the increase of pulmonary troubles. With the Factory Commission I visited a plant in Niagara Falls where a substance which is used as a substitute for emery was manufactured. Men worked for ten hours a day inhaling the fumes and dust arising from this manufactured article under conditions which were indescribable. Although masks were worn by some of the men to escape from some of the dust and fumes, yet all of these men at the end of the day's work must have inhaled large quantities of the dust and dirt. There is no doubt that these men were subjected to all kinds of pulmonary troubles, and within a few years either became a charge upon their families, or, in most cases, a charge upon the State. It is true, we were told everywhere, that these conditions are not harmful. The usual story told us was that the men, women and children employed at this kind of work thrived on it. In some cases local health officers gave the impression that conditions were good enough and did not need improvement.

The number employed in these so-called dangerous trades, however, are but a small proportion of those employed in industry generally. The latter are not subject to specific industrial diseases, but they are subject —all of them—to disease and suffering and ill health if they work under improper conditions, ventilation, light, heat and unsanitary surroundings. Undue fatigue of itself always finds the worker rendered more easily susceptible to diseases of all kinds. The physician alone can present to the legislatures and the courts the facts upon this subject so that there can be no mistake about it.

At present we have in this State a law which prohibits women working in factories for more than fifty-four hours a week, but there are numerous occupations where women are employed where their labor should be entirely prohibited, or, at least, their work should be limited to considerably less than fifty-four hours a week. The medical profession can do far more than merely point out the evils which exist and the resulting illnesses and wastage of life. They can perform a great educational function. The physician can point out to the manufacturer, as no one else can with the same force, the resulting improvement in the returns from the working man and working woman if conditions are improved.

In most cases the manufacturer is desirous of benefiting his employees. He is not the hard-hearted individual he is often portrayed, but he believes that many of these things are unnecessary, that they do no real good, and serve no real purpose in benefiting his employees. He believes that factory regulation is for the most part a fad or fancy upon the part of the so-called high-brows or reformers. It is only when he is shown by results, or by those in whose competency to pass opinion he really believes, that he is satisfied to go ahead and help along.

It has been the experience of the Factory Commission to have manufacturers tell how much benefit to themselves, not on philanthropic grounds, but as a matter of dollars and cents, the regulations had been and how they have been able to get more and better work from their employees. The physician, however, is able to tell the manufacturer in a way that no other professional man can, and point out as no other person is able to, the benefits to be derived from many of these legislative reforms, and in such a way as to force the manufacturer to subscribe to them himself and be one of the first to advocate their passage.

The inspection by medical men of factory workers and factory conditions is of the greatest importance. It has been well stated as follows:

"This is indeed the prime value of the medical inspection of work places to check industrial disease at its source. It not only removes to tuberculosis sanitaria and the like workers who have acquired disease at their occupations, but it performs a more constructive service. It discovers the causes of industrial infection or overstrain in the dusty and poisonous and straining processes of manufacture, and the improvement of such conditions is more important than the care of the sick. It protects the workers before they have been injuriously affected."

In reorganizing the Labor Department, the Factory

Commission recognized the importance and necessity for medical inspection of factories and provided for a Division of Industrial Hygiene and Section of Medical Inspection. The Commission in its report defined the duties of the division of industrial hygiene as follows:

1. Make inspections, highly technical in character, of factories, mercantile establishments and other places subject to the labor law.
2. Conduct special investigations of industrial processes and conditions with a view to recommending the adoption or modification of standards, rules and regulations by the industrial board.
3. Prepare material for leaflets and bulletins calling attention to dangers in particular industries and precautions to be taken to avoid them.

This division will act as an expert investigating body on the subjects of industrial poisoning and diseases, dangerous trades, prevention of accidents, ventilation, lighting, and have charge of many other problems of sanitation and safety, which for their proper solution require the careful, scientific study of experts. To leave such important matters to the ordinary field inspector, as has been done heretofore, is a waste of time and money and is productive of no results.

It is essential that a study be made of the effects of different occupations upon the health of workers. The subject of occupational diseases, although one of much importance, has been entirely neglected in this State.

We would therefore recommend that there be attached to the division of industrial hygiene a section of medical inspection, to be made up of one chief medical inspector, in charge, and three inspectors of the sixth grade, at least one of whom shall be a woman, and each of whom shall receive $2,500 salary annually. Such inspectors shall be physicians duly licensed to practice medicine in this State.

The section of medical inspection shall inspect factories, mercantile establishments, and other places subject to the provisions of the labor law with respect to conditions of work affecting the health of persons employed, and shall have charge of the physical examination and medical supervision of children employed.

It also provided for the physical examination of those employed in certain trades, such as bakers, and children working in factories. It was found that many bakers had pulmonary diseases, which were more or less infectious, and the examination of bakers has brought about the elimination of the men thus affected from this particular employment.

There are some men and women, and their number seems to be increasing, who are not able, because of physical or mental defects, to do any kind of work, or to work for regular hours every day, or whose employment has to be selected to fit their particular type. These are generally classified as sub-normal persons. This does not mean—as physicians know—that they are insane or idiotic or unable to care for themselves. They need some assistance in caring for themselves so that they do not become an absolute burden upon the people at large. If they are allowed to shift for themselves, as they practically now are, they become inmates of our alms-houses, our insane asylums, and the recipients of private or public bounty. It has seemed to me that the medical profession could perform a work which would be of the greatest benefit to the country by causing an investigation of the number of persons who are thus sub-normal, and finding ways and means for their employment and occupation so that instead of becoming a charge upon the State, as most of them now are, they would be self-supporting, self-maintaining, and, also, in many cases, have normal health and mind restored to them.

In this city are located two great foundations established by great philanthropists for the purpose of studying the ills of the nation and endeavoring to benefit them. I noticed the other day that one of them had a large surplus of its income for the past year. I should imagine from that that those who managed this great fund were unable to find proper recipients for its bounty. What greater work could be done with this great income than to employ competent physicians to make a study of these sub-normal unfortunates and to establish factories, under competent medical supervision, where they could be put to work suited to their needs, where their health could be studied and improved and they themselves restored to the great body politic as healthy men and women. At the same time the burden of their care would be removed not only during the time of their cure, but forever afterwards, from a State which is struggling now under so many financial problems. It is to be regretted that no member of the medical profession has been appointed on the various investigating commissions in this State which have so much to do with social legislation. Hereafter the medical profession ought to demand that when such a commission is created, at least one of their number should serve upon it. There is no doubt that the service thus rendered would be of great benefit.

Social legislation of the kind described should be furthered first of all by the medical profession. They should not wait to be called upon for their opinion as to the wisdom of a health measure. They should be the pioneers in the field. They should be the ones to indicate the channel of investigation. They with their learning and actual knowledge of the evils of overcrowding, of long hours and unsanitary conditions under which work is done, of peculiar trades which foster illnesses, should point all these out to those who are interested in improving conditions; and not being content with "blazing the way," they should also be the ones to see to it that the measures to be enacted are perfected from the medical standpoint, so that the health and the life of great numbers of the people of the country may be conserved and the future generation will have a far healthier foundation upon which to build than now.

THEODORE B. SACHS.

A Page of Biography.

GEORGE THOMAS PALMER, M. D.

PRESIDENT OF THE ILLINOIS STATE ASSOCIATION FOR THE PREVENTION OF TUBERCULOSIS.

Springfield, Ill.

This is not a tribute—not an appreciation. It is a page of the biography of Theodore B. Sachs—the only page that I can write from personal knowledge. It is perhaps a page which would not be accepted by his real biographer. It is not such a page as those of his family or his intimate associates would write at this time while the pall of his tragic death still hangs heavily over his home and the scenes of his daily activities.

I like to feel, however, that I write as Sachs would write of a friend whom he respected and deeply admired—that I see, as he would see—the clear, sharp outlines of the man beneath the wreaths of laurel which his peers have woven and the garlands of roses which his friends and loved ones have placed upon his bier in this time of their grief and sore affliction.

Sachs thought much of his friends. He was not unaffected by sentiment. He was moved by grief and suffering. And yet his vision was not obstructed or impaired by these things when he looked about him in search of truth.

Sachs saw the shortcomings and weaknesses of his closest friends and made his friends stronger by pointing out their defects in a way that was so frank and so honest that—blunt as it was—it could not offend a sane and honest man. He did not whisper behind men's backs.

So, if I can, in writing this page of his biography, I would see—beyond the wreaths and the garlands which love and sentiment have placed over him—the clear, strong, calm face of Sachs the man.

Where he was born is of little moment. Somewhere in Russia will answer. And he was a Jew. These two facts are important only that they suggest the sober and depressing atmosphere which surrounded his early years. I say early years advisedly. I take it that he had no boyhood.

When he was born is a matter of no consequence. The date of his death I do not now recall. The tragic and essential thing is that he died just at the time when his wonderful mental power was in full flower—when he was worth most to the nation, the state and the city of his adoption.

Why he came to America I do not know. He came as an immigrant and entered upon a life that was not colorless. It was drab and actively ugly. It was brightened only by the reflection of his ambition and his hope. The ugliness of the life of the immigrant and of his settlement in poverty in a strange land, whose language he never fully mastered, was the uglier because he did not have the dumb mind of most of his fellows. He was a man of education—a university graduate in law—working shoulder to shoulder with fellow countrymen whose only knowledge of life was that of ignorance and poverty. He packed clothing in a warehouse by day so that he could study medicine by night.

In this pitiful life of drudgery and poverty and with his racial desire to acquire money, it would have been the natural thing if there had been imprinted indelibly upon Sachs at that time the desire to accumulate wealth. As a matter of fact, at the time of his death, his entire estate brought barely $13,000. With a national reputation in the profession in which thousands of not unselfish men have acquired riches—in a field in which almost all are able, even with mediocre repute and ability, to gain a competence—Theodore B. Sachs, the immigrant and the Jew, died a very poor man, and his wife was compelled to seek a position to earn her living.

At the funeral of Sachs—one of the most impressive ceremonies the nation has ever known—a famous Jewish divine spoke earnestly but unwisely. He spoke of Sachs the scientist, the philanthropist, the physician, but primarily the Jew. This was not Sachs. Of his pallbearers, five Gentiles standing with tear-stained faces, gave evidence that the spirit of Sachs was not hedged in by anything so narrow as the limitation of race or creed. Sachs was a scientist, a Jew, a philanthropist; but, above all, he was a physician and a man.

He was a physician and a man. We look with fierce resentment upon the slimy serpent of politics which attacked him—which questioned his honesty, besmirched his reputation for efficiency, whispered maliciously about his personal life and finally crushed the spirit in the man.

Yet he was a physician. He belonged to the guild and the brotherhood of men of medicine. He was keener intellectually than most of his fellows; more conspicuously public spirited than any save a very few; more unselfish than any I have ever known. He was a rare man among us—one whom you would have thought the thrifty and self-interested would have loved to support because he represented the highest traditions of a profession which takes pride in its traditions. He was such a one as supplies the leaven which causes the world at large still to have faith in us.

When Sachs was unknown—when he packed clothing in a warehouse—he had no opposition. In the early days when he had his little office in the Ghetto—which he retained almost until the time of his death—the medical profession was not critical of him.

Finally he surrendered all idea of personal prosperity. He gave himself heart and soul to the tuberculosis problem of Chicago and gradually there appeared above the horizon the structure created by his splendid mind, his industry and his self-sacrifice. The medical profession generally did not commend his accomplishment. Few hands of his fellow physicians were laid upon his shoulder in a spirit of encouragement. He suffered the fate of almost all medical men who attempt to render a distinct public service and who receive therefor a pitiful tribute of popular appreciation or applause. He incurred the jealousy of his fellows.

And then he built better and bigger things—better things than any other medical man had dreamed of—bigger things than any other medical man would cease his profitable practice long enough to do. Surely now the profession whose standards he was raising would gather about him loyally! He was competing with no one. He was receiving no monetary recompense. He was simply sacrificing himself and his material prospects for the poor and the sick and the social credit of his community. Why should the most selfish of men envy him the credit of doing things they would not do?

His brethren said that he sought power. God knows he deserved it if he wanted it, and yet I gravely doubt if he ever sought it for himself. Be that as it may, if seeking power be discreditable, we must tear away the laurels of our Lincoln, our Jefferson, our Grant and even of our Washington. Prominence has never come without solicitation to any human being; and greatness has never remained long to him who has not deserved it.

Sachs was a wonderful power in the interest of the sick and the afflicted of Chicago—a wonderful power working almost alone and unaided. What a tremendous factor he might have been if every member of his profession who owed him homage and tribute had paid his debt!

In the past five years, during which I have known Sachs, personally, I have talked to scores of physicians about him. Almost invariably—with the exception of the little group of loyal souls who were close about him—I heard words of disparagement; words of belittlement; words of criticism. Sachs was ambitious, they told me. Sachs was selfish; he was prejudiced; he was politic. Many told me that Sachs was a Jew and had the traits of the Jews—may heaven have mercy upon the little, narrow, warped souls of such critics!

However we may feel about him now, no physician can honestly say that Theodore B. Sachs had the support of the medical profession of his community; the support to which he was rightfully entitled as a high-minded physician, as a philanthropist and as a wholly unselfish man. His splendid efforts are worthy of the active co-operation of those men who knew better than anyone else the merit of what he was doing. He did not get that co-operation. In its stead, he received apathetic unconcern or secret opposition.

If the united voice of the medical profession of Chicago had been raised when the first efforts were made by politicians to destroy Sach's splendid work; the political forces, fearless and reckless though they may be, would have been utterly crushed. After Sachs had been displaced, if the united voice of the medical profession had come to him in his Gethsemane, his cruci-

fixion need not have been. A united cry of sympathy, even at the last, would have restored his faith in his fellows and would have saved him to us for the big things to which his life was already consecrated. The words of sympathy and encouragement from his fellow physicians were far too few. Even now, there are medical men who know the justice of his cause, but who, for political or personal reasons, fear to cry out against the sacrifice.

Do I preach a sermon in my page of the biography of Sachs? Yes—for the life of Sachs and the death of Sachs are sermons to the medical profession.

Why must it be that we, who claim to belong to a learned profession; who pride ourselves upon our public spiritedness—why must it be that, in almost every community, we array ourselves against our fellow who, forsaking all desire for money or for personal profit, endeavors to use the gift of our guild for the benefit of our fellow men? Why must we be more ready to suspect dishonesty and hypocrisy among our own fellows than among others? Why must we stubbornly oppose that social progress which in our hearts we know to be good and which will eventually come, in the very merit of its goodness, in spite of our opposition? Why must we maintain a spirit which makes it almost blasphemy to refer to the God above us—as we do when in sentimental mood—as "the Great Physician"? Why is a Sachs permitted to be sacrificed when our voice demanding simple justice for him would have saved him—when our united voice in words of sympathy would have tided him over the valley of the shadow?

When the blow came—when into the quiet Sabbath morning came the word that Sachs was dead—the better spirit of the medical profession awoke. It cried out in indignation; but it cried too late. The medical profession that dared and the medical profession that cared for the fruits of a great, unselfish life, bowed at the grave of Sachs. It was too late for Sachs to know.

In the fulness and strength of his manhood, Sachs the immigrant died, and some way I feel that the thing that most disheartened him was the lack of sympathy of his colleagues; their lack of interest in the social things that count; their readiness to suspect their own brethren and their jealousies of one whose entire life was devoted to the strengthening of the tottering traditions of their guild.

And their united voice would have saved him and the great possibilities yet undeveloped in him!

This is not a tribute—not an appreciation. It is my most profound impression from the tragedy of this man. Perhaps this page is not one which his real biographer will choose to use. Perhaps his family and his intimates—as they read the beautifully worded and beautifully engrossed resolutions which his medical brethren have sent in—would not have written this page at all. I have tried to see the truth as Sachs would see it and in doing so, I have looked beyond the roses and the violets and even beyond the cold, stiff wreaths of laurel that florists wove—beyond the sentiment of the hour—as I did the day Sachs lay in his coffin—the day he was buried at Naperville—to see the calm, strong, earnest fact of Sachs.

Ethylhydrocuprein in Scarlatina and Measles.

Hirschfelder and Schlutz treated scarlatina and measles with ethylhydrocuprein. The treatment of scarlatina was not successful, as it did not cut short the average duration of the disease. In 11 cases of measles the average duration of the fever of the patients treated with ethylhydrocuprein was 4.3 days. The average duration of the fever in the 10 control cases not treated with ethylhydrocuprein was 7.9 days.—(*Berl. Klin. Woch.*, Sept. 20, 1915.)

A NEW ARMY RATION.

JOHN AULDE, M. D.,
Philadelphia.

Popular interest has been aroused by the current report that the British commissary department has recently closed a contract for six hundred million cans of beef stew. Allowing each man a can per day, this would supply an army of three million men for a period of nearly two years, so it appears there is no prospect of an early cessation of hostilities.

It has occurred to the writer that a study of the nutrient value of this combination would prove of special interest to a large number of persons engaged in advancing domestic science, as well as the general public.

The accompanying tabulation gives the name and amount of each of the various food materials employed together with the nutrient values in protein, fat and carbohydrate, also the calorie value, or heat and energy equivalent. In addition, this study has been extended to include certain essential mineral constituents, calcium or lime, and magnesium, since the medical profession is gradually awakening to the fact that mineral deficiency in the dietary, especially a deficiency of calcium, is directly responsible for many disorders, both acute and chronic. Thus, we know positively, that it is the pivot or turning point in the production of rickets and "summer complaint" in children; that it is the deciding factor in creating susceptibility to tubercular infection in both adults and children; and that it is a demonstrable condition in Bright's disease and diabetes. Recent investigations by the United States Public Health Service proves beyond question that the loss of lime salts is the sole cause of pellagra, a disorder which has baffled the medical profession for two centuries.

Examination of the blood in all these disorders will show calcium deficiency, and besides, the administration of calcium, or reorganization of the dietary to include a larger percentage of calcium in the food materials, is followed by immediate and marked improvement.

Professor Langworthy, of the United States Department of Agriculture, after a careful study of the food problem in American homes, estimates that the average dietary carries 10.5 to 15 grains of calcium and about half the quantity of magnesium. When these proportions are reversed, susceptibility to illness follows.

Dietary Study—British Beef Stew.

Food Materials, Showing Nutrient Values. Mineral Constituents.

	Weight ounces	Protein lbs.	Fat lbs.	Carbohydrate lbs.	Calories	Calcium Oxide Grains	Magnesium Oxide Grains
Beef, cooked	6	.0982	.1308	.....	734	.0334	.0836
Rice	4	.0070	.0002	.0610	127	.0210	.1050
Beans	1	.0043	.0015	.0122	37	.9406	1.1025
Onions	1	.0007	.0011	.0030	11	.1750	.0656
Carrots	1	.0006	.0002	.0058	13	.3368	.1400
Totals....	13 Grams	.1108 Grams	.1338 Grams	.0820 Grams	922	1.5068 Grains	1.4967 Grains
Food supply.....	363						
Food utilized...	147	50	60	37	914	1.5068	1.4967
"Balanced Ration"	300	50	50	200	1490		

In the "British Beef Stew," it will be observed, the two minerals are about equal, an item probably taken into consideration when preparing the formula. The small amount of carbohydrate can easily be made up by the addition of bread and canned vegetables. This deficiency is well shown in computing the "Balanced Ration," so well understood by stockmen—the carbohydrate content should be four times the protein, and fat one-fifth of the whole. This gives us a calorie value 50 per cent. above that of the present formula.

1305 Arch Street.

MEMBRANOUS PERICOLITIS; MEMBRANOUS SIGMOIDITIS; HALLUX VALGUS.

From the Surgical Clinic of
WILLIAM FRANCIS CAMPBELL, A. B., M. D., F. A. C. S.
PROFESSOR OF SURGERY, LONG ISLAND COLLEGE HOSPITAL,
Brooklyn, New York.

Membranous Pericolitis.

History: Female, thirty-seven years old, a graduate nurse, enters the hospital because of a dull, aching pain in the right lower quadrant of the abdomen. She states that she has practically been an invalid for seven years, during which time she has had irregular attacks of indigestion with pain in the right abdomen. These

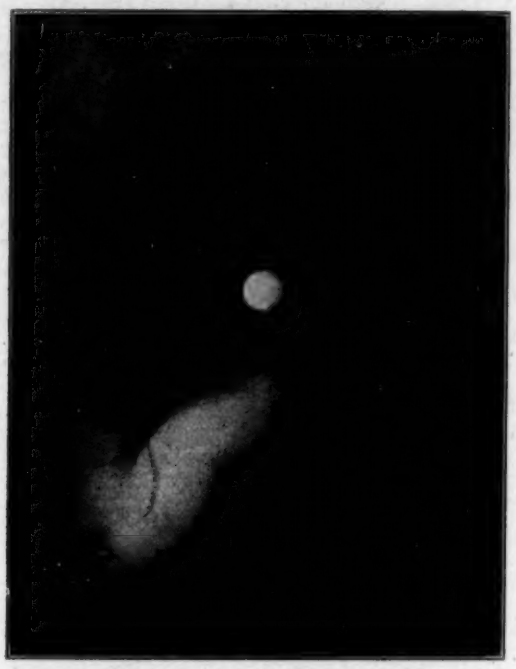

Fig. I.—Jackson's Membrane as Shown in Radiograph.

attacks are periodic, occurring about every three months and lasting for four or five weeks. During these attacks she is confined to bed and her diet is restricted to peptonized milk or patent foods.

She presents the typical symptoms of intestinal stasis —chronic constipation, sallow complexion, nerve exhaustion and a loss of fifty pounds weight. Her physician in writing of her condition says: "Constipation is present all the time and on two occasions obstruction of the intestine seemed imminent. She is seldom free from stomachic and intestinal indigestion, and at or near each menstrual period she is liable to have a hemorrhage from the stomach. Her general nutrition is greatly impaired and she suffers from extreme nervousness."

Her hemaglobin is 75 per cent. A test-meal shows the presence of blood, but the acidity is normal.

The radiogram (Fig. I) shows a prolapsed transverse colon, a greatly dilated cecum and the mid portion of the ascending colon cut off from the continuity of the tube, which in conjunction with the symptomatology leads us to suspect a "Jackson's Membrane."

Operation: Upon opening the abdomen we find a much dilated cecum, with thin atonic walls—a typical condition of "Fischler's Cecatony." Spread over the mid-portion of the ascending colon is a thin transparent membrane springing from the antero-lateral parietal wall and attached to the bowel at its inner surface. Ramifying through the membrane can be seen small blood vessels.

Note that the membrane is not only attached to the bowel, but seems to grasp it like an outstretched hand, constricting and reducing its caliber to one-third its normal size.

Furthermore, it will be observed that as these adhesions are ligated and excised, the bowel rolls out of its membranous casement and expands to its full normal diameter.

Note: This patient after passing through a normal convalescence was completely relieved of her symptoms and rapidly gaining weight when she left the hospital.

Comment: Membranous Pericolitis is often referred to as "Jackson's Membrane" in appreciation of Jackson's paper, "Membranous Pericolitis," presented in 1908, in which he first described a membranous veil about the colon and elaborated its pathology, symptomatology and treatment.

Membranous Sigmoiditis.

History: Male, sixty-five years old, comes to the hospital complaining of pain and tenderness in the lower left abdominal quadrant. Two months ago the patient suffered persistent constipation. After brisk catharsis there was a copious movement of the bowels; but from that time on he has never been free from a dull pain in the left iliac fossa. This pain radiates over the abdomen and is so much worse when the patient is lying down that for the last seven weeks the patient has not been in his bed, appetite is poor and he has lost twenty pounds in six weeks. The radiograph (Fig. II) shows some thickening about the recto sigmoid junction and this, taken in conjunction with the clinical history, leads us to suspect a carcinomatous growth in the sigmoid.

Operation: Upon opening the abdomen the sigmoid is found encased in a membranous veil which

Fig. II.—Membranous Sigmoiditis as Shown in Radiograph.

anchors it to the peritoneum of the posterolateral abdominal wall, and causes some kinking at the recto-sigmoid junction. As we free the bowel from this constricting membrane, the sigmoid resumes its normal position.

Note: After an uneventful convalescence the patient left the hospital entirely relieved.

Comment: These ankylosing membranes in whatever portion of the intestinal tube they may be found are but local expressions of the same pathology; a contributory intestinal statis due to some developmental defect of the digestive tube which inaugurates a mild but chronic inflammation of the intestinal serosa.

Hallux Valgus.

History: Patient, female, thirty-five years old, enters the hospital because of a painful deformity of the great toe. The deformity consists of a deviation of the great toe outward, with a tendency for the great toe to overlap the second toe. There has always been a tendency for the toe to crowd over on the adjoining toe, but she has the actual deformity for the past ten years, and it has become so distressing that she is compelled to seek operative relief. Her greatest distress is over the head of the first metatarsal bone, where pressure of the shoe has produced a bunion which is nothing more than an inflamed condition of the normal bursa here situated.

Examination: The deformity is apparent (Fig. III)—the pronounced deviation of the big toe to such

Fig. III.—Hallux Valgus.

an extent that it is crowded upon and overlaps the adjoining toe. Note also the swollen and inflamed appearance of the tissues over the head of the associated metatarsal bone. The condition here is as you find it, viz., deformity plus pressure effects as demonstrated in the bunion.

Remarks: The cause of this deformity in most adult cases is the pressure of ill-fitting shoes. In children it may be the result of paralytic, congenital, or even hereditary origin. When appearing in adolescence it may be the result of some defect in development, being comparable to those defects in ossification which cause genu valgum and genu varum.

Young has found that there is often present in the first tarsometatarsal joint in subjects afflicted with this deformity a wedge-shaped supernumerary bone similar or related to the intermetatarseum described by Dwight. It is obvious that primary deformity gives rise to secondary changes in neighboring structures. The pressure on the soft parts on the outer side of the toe causes the nail to penetrate the tissues and produce the painful affection of ingrowing toe nail. The continued pressure on the second toe causes it to assume a cramped position which in time results in hammer-toe.

Again, pressure effects lead to the development of an exostosis at the internal portion of the head of the first metatarsal bone and the production of an enlarged bursa or bunion, which may become inflamed and suppurate. These severe forms are to be seen in the adult and is beautifully demonstrated by the case under consideration. It is interesting to note that when once the great toe deviates outward, then the extensor proprius hallucis tendon exaggerates the condition and is an important factor in its further progress.

These patients are great sufferers, they cannot stand or walk without having great discomfort. There is not only difficulty in walking but loss of elasticity in the gait and almost constant pain in the affected joint and the neighboring toes. These patients are great sufferers and in consequence the general health deteriorates and shares in the local misery.

Unless this lesion is properly treated it will grow progressively worse.

Operation: This is one of those severe cases which need radical operation; we shall therefore resect the head of the metatarsal with the condyle of the phalanx —you note that the incision is made not on the inner side over the deformity, but between the toes after the suggestion of the late Dr. George R. Fowler. The joint is now dislocated outward and the head of the bone removed. We also do a plastic operation for lengthening the tendon of the extensor proprius hallucis, that it may no longer be a factor in exaggerating the deformity. It is not necessary to do the radical operation on all cases—some will yield to milder treatment.

The first and most important consideration is the wearing of proper shoes. They should be as wide as the weight-bearing foot in front, with a straight inner front edge. Separately toed stockings will also aid.

In mild cases a splint of pasteboard to which the toe is bound, so as to pull it inward, or a light sole plate with a toe-post elevated between the first and second toes is useful.

After operation the straightened toe is retained in plaster bandages for four weeks.

394 Clinton Avenue.

THE PSYCHIATRIC CLINIC AT JOHNS HOPKINS.

ADOLF MEYER, M. D.
Baltimore, Md.

Medical scientists have achieved a great success in creating a system of treatment that eliminates the obsolete methods of treating the man and woman suffering from mental disease as a criminal. This came about through the foundation of a type of institution, the psychiatric clinics, the first example of which was founded at Ann Arbor, Mich., by the late Dr. Herdman, professor of neurology at the University of Michigan. The Psychopathic Hospital in Boston, built by the State, under the direction of Dr. Owen Copp, and the Boston Psychopathic Hospital took definite form, in a legislative act, and later Mr. Henry Phipps gave a donation to the Johns Hopkins Hospital to found a psychiatric clinic, an institute, the need of which Professor Osler had well outlined.

The first conception of such clinics no doubt was founded on the general idea that the beginning of mental disease should receive the same type of medical care as the general hospitals could afford. A wide range of cases had scarcely ever come within reach of either the physician who worked in general hospitals or of the psychiatrist who worked in the special institutions for the insane. For teaching, and for actual service to a locality it appeared necessary to make provisions both for the severe cases and simple forms, and for those cases which had developed to such an extent that the patients were in a serious mental condition. Neither type had so far been welcome in general hospitals, partly on account of certain risks, such as suicide.

Much thought was required to adopt methods of treatment which would be suitable in relieving the many varieties of nervous ailments. It was essential to provide facilities for the admission of any type of mental disorder from the very lightest to the gravest forms, patients who formerly were thrust into jails and lock-ups until they could be transferred to the padded rooms or cells of the asylums.

What is needed in psychiatry is an assurance to the public that cases with any form of mental disorders can find proper care and treatment in modern hospitals. In the planning of a building such as the psychiatric clinic at Baltimore, it was necessary to take into consideration not only the immediate opportunities and problems but also the future in the development of psychiatry and psychopathology. The result was a set of plans which incorporate the best possible facilities of accommodation for treating a variety of disorders from the simplest psychopathological disturbances, which nobody would want to associate with the traditional ideas of mental disease, to the severe mental disorder; also plans for laboratory and research facilities in the internal medicine issues of mental disorders, and in the neuropathological work and also in psychopathology.

The provisions for the patients include, first, an outpatient department with a waiting room, which is in part also used for occupation classes and for the social service workers, and examination rooms, and a demonstration room for classes and instruction.

For the actual clinic, that is, the hospital division, is provided an admission ward, facilities for the care of specially excited cases; then a semi-quiet ward; a rest for patients needing quiet, and a special ward for such cases as should not be brought into contact with the more mentally disturbed patients.

The front of the building looks almost directly to the north and only few of its rooms would have sunlight. This side was, therefore, almost exclusively given over to the administrative department. From either end of this north front a pavilion of four superimposed wards extends to the south, the basement containing the hydrotherapy and mechanotherapy rooms and some orderlies' quarters. On the first floor, the admission ward is extended into a small division for more excited cases; the second floor provides for ten semi-quiet cases; the third floor for about sixteen quiet cases; and the fourth floor for eight private cases on each side of the house.

The top floor is reserved for the large recreation hall and for roof gardens.

The ground plan of the second floor gives a clear idea of the general organization of each ward. The unit consists of a ward with eight beds, and two single rooms, and a day room. One room contains two tubs for continuous baths. There are also a toilet and lavatory, the utility room, a nurses' room, clothes room, an occupation room; and a physician's examining room. The first floor with the admission ward contains an examination room for the physicians, a small waiting room, and a cleansing bath, a utility room and pantry, a clothes room, and a nurses' room, a toilet and lavatory, a single room for a patient, and then the ward for eight beds. Beyond that, there is a division consisting of three single rooms, and a small water section; and on the other side a small corridor opening into the court, and a bath room with two tubs for continuous baths; next to this, a small room with one tub for continuous bath and closet, adjoining a room for a private patient. The end of this ward is reserved for a small day room for the cases of this division. The ward with the eight beds is subdivided by partitions so as to give a certain amount of privacy to each individual bed. The southern exposure of a middle part of the building, is used for a reception room for the head nurse and her first assistant; for a small division for special cases with three or possibly five beds connected with a bath room. The fourth floor is taken up altogether with rooms and suites of rooms for private patients.

The second floor on the east wing of the north front is devoted to a large library, and the director's rooms, consisting of two offices, and two research rooms, and the lecture room complex consisting of the lecture room proper, a waiting room, chart room, projection room, and a draughtsman's room.

The entire clinic is an annex of the Johns Hopkins Hospital and Medical School. The food is furnished from the general kitchen. The nursing force is provided for in the general nurses' home. The nurses are partly trained at the Johns Hopkins Hospital, with experience in various institutions for mental cases, and others who have had their training in private institutions.

The clinic does not in any way want to form a fundamental contrast to the already existing aids in the care of mental diseases. It aims to be a valuable supplement, with the best possible facilities conducted, under the beneficial influence of continual use in teaching, in discussion, and under the eyes of colleagues working, in the various specialties that have to be applied in psychiatrical work.

It must do its share to eradicate the widely spread notion of the stigma of insanity, not by making itself appear as something aloof from actual mental disorders, but by showing that any kind of mental disorder receives very intense and well-directed work, and not merely asylum care and shelter.

Among the most important effects of the working of such a hospital is the opportunity it affords to the medical student, and to some extent to post-graduate workers, to obtain an intimate experience with the manner mental cases are studied and treated. It is not fair to leave this whole question to untrained common sense. Psychiatry really has so many perplexities and difficulties, and also adequate methods to meet them, that it would not do to leave these conditions any longer to the guessing and mere human ingenuity of physicians and lay persons.

To spread a knowledge of these facts we must have opportunities to obtain actual practice in the wards and their laboratories and in research. It is very much to be hoped that in the near future, physicians, who are to be given the license to work on mental cases, should have to demonstrate that they have actually studied and treated a certain number, at least a dozen or two cases personally and completely, under adequate supervision before they are allowed to pass on mental disorders in the form of commitment or to take charge of the treatment of such cases.

War Time Surgery.

A. W. Mayo-Robson, now a colonel in the British army, reports in the *British Med. Jour.* the case of a shrapnel wound low down in the cecal region, bleeding freely on admission, about four hours after injury. On opening the abdomen, a large wound was found in the cecum; the spermatic cord was divided and bleeding freely, and the bullet had passed through the bony pelvis into the buttock. The cecum, which was full of feces, was closed by silk suture used continuously in two layers, the cord was ligatured, the right testis removed, and a tube passed through the opening into the buttock. The abdomen was wiped out with swabs dipped in normal saline solution and closed around the drainage tube. The patient recovered.

THE PATHOLOGY OF SYPHILIS.

FAXTON E. GARDNER, M. D.,
ASSISTANT VISITING GENITO-URINARY SURGEON, NEW YORK POLYCLINIC.
New York.

(*Continued from page* 143.)

But, despite this variety, the fundamental histological lesion of syphilis is essentially the same, wherever and whenever found, namely, a *granuloma originating in the lymph spaces surrounding the blood vessels.* What we already have found in the chancre, that is, an infiltration of lymphocytes and plasma cells around capillaries and blood vessels, either pre-existing or newly formed, remains the substratum underlying all microscopical pictures of all syphilitic lesions, whether young or old. Secondary syphilides are the result of a similar perivascular infiltration, whether they be of the fugacious macular, or of the superficially erosive form (mucous patch) or of the more resistant maculo-papular or papular types, where giant cells are generally found and where local conditions (denseness of tissues, pyogenic infection, moisture) somewhat modify the morbid anatomy. Again, the gumma, the typical so-called "tertiary" lesion, which at first sight looks so different from the earlier manifestations, is caused by the same perivascular infiltration of lymph cells, plasma cells, giant cells with some proliferated connective tissue cells. But here the vascular lesion is deeper; instead of simply having a sheathing of the blood vessels by the infiltration, we also find a marked alteration of *all* the walls of the blood vessels. The lesions of the intima are very apt to cause thrombosis; following the shutting off of the blood supply the infiltrated area becomes necrotic and is eliminated. Owing to these advanced arterial changes, a gumma is much more destructive, even if it contains very few spirochetes, than a "secondary" lesion teeming with spirochetes, but in which a more or less complete restoration of the blood vessels is possible and very generally occurs.

After this very brief résumé of the general conception of syphilis, and of the general histology of the disease, we have to consider the various lesions of the different organs.

From what has already been said several times before, it is plain that the **vascular** system is the one *most affected* in syphilis, even more, thei one *through which all others become affected.* The part played by syphilis in the etiology of cardio-vascular disease is becoming more and more prominent every day; and it is strikingly brought out by recent statistics of insurance companies, which, despite the difficulty of detecting syphilis in many instances, show that the mortality from cardio-vascular disease is more than double in syphilitics than in non-syphilitics.

It goes without saying that all of the vascular system may be infected by the spirochetes; however, it is claimed that the arteries are particularly liable to damage. In fact, syphilitic arteritis has received a great deal of attention (which it richly deserves), while syphilitic conditions of the veins are hardly mentioned. It may be that veins are not as frequently affected as arteries, on account of the lesser strain they are normally submitted to, and because anatomically speaking, a vein is a much simpler and less delicate structure than an artery, but the difference may be only apparent and due to the fact that disease of the arteries compels much more clinical attention than a similar condition in a vein.

Syphilitic arteritis is generally spoken of as *endarteritis.* This word conveys to the mind the idea that the lesions of the intima are the most important. Truly, such lesions exist in almost all cases and are of paramount importance as to the patency or blocking of the vessel, as already stated about gummata; but they are *not the initial lesion.* Moreover, the idea that endarteritis is the chief condition might lead one to infer *a priori* that lesions extend from within outward and are started by spirochetes deposited by the blood stream on the surface of the intima of the affected blood vessel itself. As this view is incorrect, the name endarteritis is doubly misleading, if meant as a synonym for syphilitic disease of the arteries. Infection takes place through the vasa-vasorum which end in the media, and is primarily a *mesaxteritis,* later spreading to the intima and to the adventitia. It is caused by spirochetes that have invaded the vasa vasorum at the time of generalization, and stayed there. The arteries best supplied with vasa vasorum are those most frequently affected.

In the smaller arteries, whose walls are chiefly muscular, the lesions lead to *sclerosis* and endarteritis. Obliterating endarteritis, with its symptoms of intermittent paralysis and claudication at first, and gangrene later, seems to be closely allied to syphilis in almost all cases. In the media the proliferated tissue shows little tendency toward caseation, but becomes fibrous and cicatricial. Arteriosclerosis, especially in young subjects, is in most cases due to syphilis.

In the larger arteries, of the elastic type, the lesions are somewhat different. The aorta is the one most frequently involved. In the earlier stages there are only found gelatinous looking patches, caused by thickening and infiltration of the intima, confined to narrow areas at the origin of the aorta, near the sigmoid valves. Later the pathological picture, as seen at autopsy, is quite characteristic and has been well described by Larkin. The lesion, always more marked near the root of the aorta, is usually limited to the ascending and transverse parts of the arch, with a sharp line of demarcation, the remainder of the aorta looking fairly normal. Only in marked cases is the thoracic aorta involved; in extreme cases the abdominal aorta exhibits similar lesions. The diseased portion presents either a diffuse dilatation or a saccular aneurysmal pouch, and the normal glistening appearance of the intima is lost, being replaced by confluent, pearly white, elevated scar areas, scattered through which are often seen yellowish patches of fatty degeneration. The scars are linear, or irregular, or radiating. To the touch the scar area is hard, sometimes cartilaginous, thickened and fibrous, while next to it there may be a zone where the aortic wall is so thinned as to become translucent.

In other cases, however, almost as numerous, there is only an athero-degenerating process, with but slight changes in the intima.

On section, lesions of the first type described above are always found to be associated with mesaortitis (Heller) and periaortitis: there is a perivascular infiltration of small round cells around the thickened vasa vasorum. The elastic tissue is split and fragmented: in late cases it may have almost completely disappeared. Small gummatous formations are generally found scattered all over the morbid focus. The development of aneurysm in such a diseased vessel is easily conceived. While some observers have failed to demonstrate spirochetes in sections of aortae thus altered, they have been found therein by Levaditi and others, who established beyond doubt the nature of such a condition.

The heart is also frequently involved in syphilis. All tissues may be affected, either by hyperplastic infiltration or gummatous formation. The myocardium is

chiefly found the seat of sclerotic degeneration or gummata. while syphilitic endocarditis mainly attacks the left ventricle and the septum; it may also be the origin of valvular lesions.

Thus pathology teaches us the enormous importance of syphilis in the development of cardio vascular disease. No diagnostic of the latter is complete, no treatment is rationally grounded until the presence or absence of syphilis has been ascertained.

Fully as frequent and as important is syphilitic involvement of the **nervous system.** The vascular system is so often affected, because at all times it bears the brunt of the attack of the infection; the nervous system is so often affected owing to its liability to sensitization, and because of an anatomical disposition that greatly favors the maintenance of a spirochetal focus all along the central nervous organs, if one is formed at the time of secondary generalization; I mean the lack of direct communication between the cerebrospinal fluid and the blood, the so-called meningeal impermeability.

Invasion of the nervous system begins very early. During the secondary period, and sometimes earlier, lymphocytosis and an increase of the globulin contents in the cerebrospinal fluid demonstrate the presence of an early syphilitic meningitis, the frequency of which is variously estimated by different investigators at from 20 to 80 per cent. of all cases. It seems likely that in many cases the changes are only transitory in character and the alterations of the cerebrospinal fluid are rather due to the passage of the toxins of the spirochete through the filter of the choroid plexus than to the passage of the spirochete itself. Fordyce thinks, and such a view is very rational, that probably no larger percentage of luetic individuals show all phases positive in the spinal fluid in the early secondary stage than later develop frank disease of the nervous system. This would give a right to infer, that if spirochetes have really passed through the choroid plexus during the early generalization (maybe owing to a specially marked degeneration of the vascular walls?) syphilis of the nervous system is very likely to occur in later years; a contingency not at all surprising, since spirochetes, once they have gained entrance in the cerebrospinal fluid are practically out of reach of remedies injected into the circulation, and can only be dislodged—perhaps—by intraspinal treatment.

The presence of that spirochetal "remnant" in the cerebrospinal fluid accounts for the frequency of syphilitic lepto-meningitis. Nervous syphilis may involve only the blood vessels, or the coverings of the nerve centers, or the parenchyma itself of those nerve centers. Generally, while more particularly affecting one of these three tissues, it also encroaches upon the others.

Cerebral arteritis does not differ from the pathological standpoint, from syphilitic arteritis as seen in the other smaller arteries of the body; but the resulting lesions are different, because there is no collateral circulation in the brain. Blocking of the arteries will be followed by softening of the part thus rendered ischemic. Cerebral hemorrhage is also a consequence of syphilitic arteritis. Arteries of the base and the circle of Wollis are the sites of election for syphilitic lesions.

Meningitis is probably the most common lesion of syphilis of the nerve centers. In the very great majority of cases it originates in the leptomeninges, from where it may extend to the overlying dura, and to the subjacent cerebral cortex. Gummata or the ever-present hyperplastic fibrous inflammation are the pictures shown by the microscope. Sometimes the dura is involved by propagation of a bony lesion of the skull. Meningitis of the base of the brain, particularly of the region of the chiasma and interpeduncular space is almost a constant lesion in nerve syphilis, and explains the frequency of the participation of the ocular nerves.

If the infiltration or small gummata invade the nervous substance itself, paresis and tabes will be the result. Thus tabes and paresis do not appear any longer as sharply distinct from cerebrospinal syphilis. When the ordinary syphilitic superficial meningitis goes deeper in the cortex and becomes a meningo-encephalitis, we have to deal with paresis. When spinal meningitis involves the posterior roots, secondary degeneration of the posterior column set in, and we have to deal with tabes. The spirochete has been directly demonstrated in paretic brains and tabetic cords.

The clinical difference between so-called cerebrospinal syphilis and tabes and paresis, and the very marked therapeutic difference between the two, while both are fundamentally the result of the same cause, are explained by this fact, that cerebrospinal syphilis is rather a superficial hyperplastic lesion of the brain coverings, which can be repaired, whereas the other two are associated with parenchymatous degeneration and destruction of nerve cells which cannot be restored or replaced.

Syphilitic involvement of the peripheral nerves is uncommon, and unimportant when compared with syphilis of the nerve centers.

Next in frequency and importance are probably syphilitic lesions of the **digestive tract** and its adnexa. Many of these lesions are evidently syphilitic and have been recognized as such for a long time, but many others are of a mooted nature and, at first sight, might not look specific. However, it seems that pathology bids fair to repeat along the digestive tract what it has done in diseases of the vascular and nervous systems, and extend the domain of syphilis in a way hitherto hardly suspected.

The buccal cavity has always been a favorite site for syphilitic lesions. All forms are found there from the chancre (lip, tongue, tonsil), the secondaries (mucous patches) to the destructive gumma of the palate, with subsequent perforation, or of the fauces, with ulceration and cicatricial atresia of the pharynx. But two other lesions are particularly interesting from the pathological standpoint: one is *sclerous glossitis,* with its fissured and cracked tongue, because of its pathognomonic character; the other is *leucoplakia,* frequently associated with the former lesion. Leucoplakia is interesting on account of its possible evolution into cancer, because its relationship to syphilis is not absolutely clear in a small number of cases, and, finally, because it seems that a chronic irritation of the mouth (tobacco) is necessary for its development, and, therefore, it probably is not a pure syphilitic condition. It may be stated, however, that at least 95 per cent. of cases of leucoplakia of the mouth are seen in syphilitics, and that, therefore, from the practical standpoint, we must consider it as a syphilitic lesion.

The chapter on syphilis of the stomach and intestines still remains to be written. As long as it was restricted to definite syphilitic lesions found at autopsy or accidentally cured during life by antiluetic treatment, tried as a last resort when everything else had failed, syphilis of the stomach has been considered as rare. But our knowledge of the dissemination of spirochetes during the secondary period naturally leads us to believe that the richly vascularized abdominal digestive viscera cannot escape frequent involvement. Indeed, during the

secondary period, vomiting and catarrh of the intestines often point to a condition similar to that of the skin and other mucous membranes. Chronic gastritis and enteritis with perivascular round-celled infiltration and hyperplasia of the connective tissue has been described and claimed to be a very common lesion. In the tertiary period, gummata are seen, and have been often mistaken for tumor. They are without doubt the best known form of syphilis of the stomach and intestines. They lead to ulceration and subsequent stenosis. Stricture of the rectum is the most important example of this morbid process. The lower part of the jujunum and the ileum are also frequent sites.

But the most interesting question nowadays is the relation between the transient secondary involvement of the stomach and intestines, and chronic gastritis, enteritis, and ulcer that may develop later. The number of syphilitic patients who a few years after their chancre develop stomach or bowel trouble, and improve only when antiluetic treatment is given, does not allow us to believe that a coincidence explains all, and distinctly points to a causal relation. As regards gastric ulcer, it has been claimed that syphilitic endarteritis is a factor in about one-fifth of cases of acute round ulcer. Certain it is that syphilitics very often have hyperacidity of the stomach, and that round ulcer is very frequent in tabetics. It is idle to say that direct proof of the connection between syphilis and gastric ulcer is difficult to obtain; the same might have been said very few years ago of the relation between tabes and paresis and syphilis. If, for the present, we must be content with bearing the possible relationship is mind, and looking for syphilis every time we have to deal with an obscure case of dyspepsia, we may trust pathology to elucidate many of these questions in the near future. And let us not forget that recent statistics of insurance companies show a mortality from gastro-intestinal disease about 75 per cent. higher in syphilitics than in non-syphilitics. No further argument is needed to show the primordial part played by syphilis in this respect.

The *liver* is frequently attacked by syphilis. It may even be the seat of severe lesions during the secondary period. The catarrhal lesions, analogous to those of the skin, which not infrequently cause jaundice may lead to severe parenchymatous destruction, even to acute yellow atrophy. This is not surprising when we think of the heavy extra strain put on the liver by the defensive processes of the body and the elimination of toxins, of destroyed blood corpuscles it has to carry. Later, spirochetal remnants of the secondary invasion cause interstitial hepatitis, perihepatitis, gummata or amyloid degeneration. Gummata are rather frequent on the anterior surface, at the junction of the right and left lobes.

Pancreatic disease is rare. An interesting point has been raised as to the possibility of syphilitic pancreatic lesions explaining the positive Wassermann reaction in diabetes; and I now have under observation a case of diabetes with leucoplakia of the tongue and positive Wassermann in which such a relationship is probable; but no direct proof has yet been given.

(To be concluded.)

Osler says the long study of Flexner and others have made possible the production of a serum which has a specific influence on the meningococci in the spinal canal, partly by a direct bacteriacidal action, partly by bringing about phagocytosis; and there may be an antitoxic action.

A true putrefactive process, comparable to that which takes place *in vitro*, occurs in the wounds and that the three phases succeed each other in the wound as they do *in vitro*.

CLINICAL MEMORANDA.

ARTHUR C. JACOBSON, M. D.,
Brooklyn, N. Y.

The Anociative Value of Alcohol in Disease.

It is our conviction that the strong reliance placed by a past generation of physicians upon alcohol in certain clinical circumstances was not altogether misplaced. Only three things may be said against this older use of alcohol. It was based upon the erroneous notion that it was a stimulant, it was used in too wide a range of cases, and it was used too freely.

But alcohol can still serve us a very useful purpose, provided we clearly understand the nature of its action and narrow the clinical indications properly.

Alcohol is a narcotic and anesthetic. It partially isolates the brain against harmful stimuli. These properties we should avail ourselves of more often. Alcohol so used is sometimes infinitely preferable to heroin, opium, morphin and kindred drugs.

We are certain that in some of those terrific infections such as the aural surgeon occasionally encounters, with sinus involvement requiring jugular surgery, and perhaps with pneumonic infarcts, etc., that alcohol, by keeping the patient partially anesthetized or narcotized, will often enable him to evade the valley of the shadow by lessening the consciousness of strain, relieving the exhausting cough, and diminishing pain during and between dressings. We merely instance this as a proper indication.

Despite the action of alcohol upon the white cells, we believe that the properties discussed should be taken advantage of more often, and that the patient's *morale* is a consideration not secondary to anything else.

Vaccination Technique.

The writer has found the following method of vaccinating more dependable than others. It seems to insure a "take."

After cleansing of the site chosen the point of a straight sewing needle (No. 7) which has been sterilized is introduced parallel with the surface of the skin and passed under the epidermis for a distance of not more than one-eighth of an inch, when the point is permitted to emerge and the overlying epidermis is broken through, after which the needle is brushed across the perforated area two or three times to press aside the ruptured tags of epidermis and insure a slight degree of denudation, no blood, of course, being drawn. Putting the skin under slight tension facilitates the superficial perforation. A drop of vaccine is placed over the denuded area and the epidermis which has been removed is replaced by sterilized rubber dam, that is to say a piece of adhesive plaster about two inches square, in the center of which is a piece of rubber dam about half an inch square, is placed over the site of vaccination, care being taken to have the denuded area directly under the center of the rubber dam. This dressing may be left undisturbed for about six days, after which the usual dressings are to be substituted. Zinc oxide plaster is employed.

The procedure is rapid and painless and the drying process is eliminated.

This method might possibly prove useful as a standardized procedure for the tuberculin, luetin and Schick tests, as well as for vaccination against variola.

115 Johnson Street.

Sakagami says the following microbes grow in normal serum: staphylococcus pyogenes, pneumococcus, pseudo-tuberculosis, streptococcus pyogenes, and M. catarrhalis.

THE DIETETICS OF EFFICIENCY AFTER 40.*

LOUIS FAUGERES BISHOP, A. M., M. D.
CLINICAL PROFESSOR OF HEART AND CIRCULATORY DISEASES, FORDHAM UNIVERSITY SCHOOL OF MEDICINE; PHYSICIAN TO THE LINCOLN HOSPITAL.
New York.

Granting that 40 years of useful labor should be the ideal of the man who has spent 40 years in education and preparation for the efficient life of an active career, the matter of diet becomes one of prime importance.

The great variety of recommendation leads to the inevitable conclusion that there is room for a difference of opinion or else that the problem is a special one for the individual rather than a general one for a whole class. However, there are certain principles that apply to all. During the growing period of life and early maturity, an intake of food far beyond the actual requirements is not only tolerated, but may, through stimulating growth and action, be distinctly advantageous. At or about 40 the excess of food becomes a burden to the individual because growth has stopped and energy is not expended with the same lavishness. The hydrocarbon engine, with a properly adjusted fuel supply, produces the maximum amount of energy with the least amount of smoke and waste. The same is true of the human machine. The lower the intake of fuel can be kept, without sacrificing weight, energy or the integrity of the blood (as shown principally by the coloring matter), the longer health will be preserved and disease avoided.

Another general principle that can be applied to a class of workers over 40 is that they should have a balanced ration—not too much of the carbohydrates and not too little of the proteins. Sugar should also be carefully watched because it is by no means as well tolerated as in childhood.

When it comes to the individual and the development of impairment of dietetic origin, the important fact to be considered is the possibility of acquired food idiosyncrasy. This is recognized in the frequent counsel that red meat should be avoided, or, more specifically, in the withdrawal of eggs from those who have acquired egg sensitiveness, of fish in those who have acquired fish sensitiveness.

Some persons develop certain definite disorders when food is not agreeing with them that are easily interpreted. In the greater number, however, acquired food idiosyncrasy, or, in other words, an acquired condition by which an article of food becomes capable of causing damage, is not accompanied by any discomfort, and may even be accompanied by a sense of stimulation when it is consumed.

One of the great causes of impairment of efficiency after 40 in the field of dietetics is this acquired unconscious intolerance of certain articles of food. Someone will immediately say, "How am I to know that I am to be injured by some article of food which is agreeable to me when I take it?"

This can only be discovered by a careful study of the earliest signs of impairment, such as, disturbance of the circulatory organs shown by pain in the region of the heart, a departure from normal of the blood pressure—either high or low, or by an irritation of kidneys shown by the presence of albumen on examination. Sometimes insomnia—when a person wakes at two or three in the morning and lies awake—is a sign of impairment, or there may be the conscious loss of power to carry on one's affairs.

The other reason to suspect an impairment of efficiency through the disturbed food relation is on account of certain events which we know from the study of a large number of histories of such cases has marked the starting point of such a disorder. These are: a severe attack of influenza; a severe infectious disease, like typhoid fever; a serious surgical experience, such as a condition requiring operation for appendicitis or gall stones; an attack of food poisoning; or a period of extreme nervous strain and worry. When a man has passed through one of these periods, a study of food relations becomes important. If the blood pressure does not return or stay at a normal point, if neurasthenic symptoms continue, or there is a decided disturbance of digestion, it is almost certain that there has been some change in the man's relation to food.

In general, it may be said that the dietetics of efficiency after 40 demand the regulation of food as to quantity in all individuals and the early recognition and management of acquired food idiosyncrasies which come to many, so that they may be saved from the development of structural damage.

If food regulation is not undertaken and a wrong diet is pursued, the inevitable result is gradual impairment of structure leading to a development of a class of troubles which might be called the "sclerotides," namely, hardening of the arteries, kidneys, heart muscle and other structures.

By a proper diet and a suitable general regimen, arteriosclerosis may be avoided, and even when it has begun its course may be checked. In this way efficiency is continued to a great age.

* Read before American Association of Medical Jurisprudence, Fourth Annual Meeting, May 6, 1916, Washington, D. C.

THE DIAGNOSTIC LABORATORY.

Conducted by
CHESTER T. STONE, M.D.
Brooklyn, N. Y.

The query department has been confronted with a rather difficult problem in the form of a request for the "most reliable method of performing the Wassermann test." It is safe to say that no two workers employ exactly the same technique. The following is a description of a combined method developed from a series of check tests on the different methods now in use:

Amboceptor.—Inject a rabbit with 5 c.c. of washed fresh sheep's corpuscles in 5 c.c. of 0.9 per cent. NaCl solution. At intervals of seven days inject 10 c.c. and 15 c.c. respectively of the same strength cell-solution, each solution being freshly prepared. Nine days later draw about 3 c.c. of blood from the animal's ear and titrate the serum separated from it (see below). If of strong titre, bleed the rabbit from the carotid, collecting all the blood. When the serum has separated, strips of filter-paper are soaked with it, thoroughly dried upon unbleached muslin, and preserved in a wide-mouthed, dark glass bottle, which should be kept in a cool place protected from light.

Antigen.—Macerate 2 pounds of finely chopped human or beef heart, free from fat, in 5 pounds of absolute alcohol for one week in the incubator at 37.5° C. Filter, evaporate to dryness and dissolve the residue in 1 pound of ether. Concentrate to 100 c.c., add 1½ pounds of acetone (Kahlbaum), filter, evaporate and make from the dry residue a 3 per cent. solution with wood alcohol. Titrate (see below).

Cholesterinized Antigen.—Add 100 mg. of cholesterin to 25 c.c. of plain antigen, shake and incubate for 24 hours at 37.0° C. for test, add 1 c.c., three drops at a time, to 9 c.c. of 0.9 per cent. saline, which makes a dilution of 1:10.

Complement.—Bleed a guinea-pig from the carotid, allow the serum to separate and make with this a 1:10 dilution with 0.9 per cent. saline. Titrate. Complement may conveniently be preserved for several weeks by the method given in the May issue of this journal.

Corpuscle suspension is a 5 per cent. solution of washed fresh sheep's cells in 0.9 per cent. NaCl. The patient's serum is separated from the clot and heated in a water-bath at 54° C. for one-half hour. This inactivates the complement present.

Amboceptor Titration.

Tube No.	Salt solution	Serum	Complement 1—10		Corpuscles 5%	
1	0.5 c.c.	0.1 c.c.	1—100	2 units	0.5 c.c.	Incubate ½ hour 38° C.
2	"	"	1—200	"	"	
3	"	"	1—400	"	"	
4	"	"	1—500	"	"	
5	"	"	1—600	"	"	
6	"	"	1—800	"	"	
7	"	"	1—1000	"	"	
8	"	"	1—1500	"	"	
9	"	"	1—2000	"	"	

The smallest amount giving complete hemolysis represents one unit. Two units are used in the test.

Titration of Amboceptor paper (strips are cut 5 mm. wide).

Tube No.	Salt solution	Paper	Complement 1—10	Corpuscles 5%	
1	0.5 c.c.	1 x 5 mm.	2 units	0.5 c.c.	Incubate ½ hour 38° C.
2	"	2 x 5 mm.	"	"	
3	"	3 x 5 mm.	"	"	
4	"	4 x 5 mm.	"	"	
5	"	5 x 5 mm.	"	"	
6	"	6 x 5 mm.	"	"	
7	"	7 x 5 mm.	"	"	
8	"	8 x 5 mm.	"	"	
		Controls.			
1	"	0.0	"	"	
2	"	3 x 5 mm.	"	"	
3	"	0.0	"	"	

For test use double the size paper producing complete hemolysis = 2 units.

Titration of Complement

Tube No.	Salt solution	Amboceptor	Complement 1—10	Corpuscles 5%	
1	0.5 c.c.	2 units	0.1 c.c.	0.5 c.c.	Incubate ½ hour 38° C.
2	"	"	0.2 c.c.	"	
3	"	"	0.3 c.c.	"	
4	"	"	0.4 c.c.	"	
5	"	"	0.5 c.c.	"	

For test use double the amount giving complete hemolysis.

Antigen Titration. Antigenic Dose.

Tube No.	Saline	Antigen		Serum known positive	Complement	Amboceptor	Corpuscle suspension	
1	0.5 c.c.	0.2 c.c.	1—100	0.1 c.c.	2 units	2 units	0.5 c.c.	Incubate ½ hour 38° C.
2	"	0.5 c.c.	1—100	"	"	"	"	
3	"	0.1 c.c.	1—10	"	"	"	"	
4	"	0.15 c.c.	1—10	"	"	"	"	
5	"	0.2 c.c.	1—10	"	"	"	"	
6	"	0.25 c.c.	1—10	"	"	"	"	
		Anticomplementary dose					"	
1	"	0.3 c.c.	1—10	0.0	"	"	"	
2	"	0.35 c.c.	"	"	"	"	"	
3	"	0.4 c.c.	"	"	"	"	"	
4	"	0.5 c.c.	"	"	"	"	"	
5	"	0.8 c.c.	"	"	"	"	"	
6	"	1.0 c.c.	"	"	"	"	"	
7	"	2.0 c.c.	"	"	"	"	"	
8	"	3.0 c.c.	"	"	"	"	"	
9	"	4.0 c.c.	"	"	"	"	"	

Having prepared the reagents and found their titre, the test may be performed. To insure accurate results, reagents should be titred on each test day.

Arrange the tubes for the test as follows:

neg. pos. ?
3 6 9 Back row.
1, 2; 4, 5; 7, 8 Front row.

Test. Tubes 1, 2, 3 are controls, in which a known negative serum is used.
Tubes 4, 5, 6 are controls, in which a known positive serum is used.
Tubes 7, 8, 9 contain the suspected serum.

In all tubes place 0.5 c.c. 0.9 per cent. NaCl, 2 units complement, 2 units amboceptor. In all the front tubes 1, 2, 4, 5, 7, 8, place one unit antigen (that amount producing complete inhibition in the titration).

In tubes 1, 4, 7, place 0.05 c.c. of the sera, negative, positive, suspected respectively, and in tubes 2, 3, 5, 6, 8, 9, place 0.1 c.c. of the respective sera.

Incubate half hour in the water bath at 38° C. Add 0.5 c.c. corpuscle suspension to every tube and again incubate half hour. Make readings.

The tubes of the back row contain no antigen and act as controls for those in the front row. Should the back tubes fail to hemolyze, a reliable reading cannot be made, for some error* has occurred in the technique or else the serum is self-inhibitory. (See Sources of Error in the Wassermann Technique., *N. Y. Med Jour.*, June 20, 1914. Stone.)

The Wassermann readings are somewhat arbitrary, depending mainly on the personal factor of the worker. Readings for the method here given are as follows:

Tube 7	Tube 8
0.05 c.c. hemolysis	0.1 c.c. partial inhibition = 1 +*
0.05 c.c. hemolysis	0.1 c.c. inhibition = 2 +*
0.05 c.c. partial hemolysis	0.1 c.c. inhibition = 3 +
0.05 c.c. inhibition	0.1 c.c. inhibition = 4 +

*To be considered negative in absence of clinical symptoms.

Uranalysis.

Albuminuria. The principal albumin bodies occurring in the urine are those of the blood serum, serum albumin, and serum globulin. Their occurrence in the urine indicates the kidneys impervious to these substances under normal conditions, have become pervious. Only a very small portion of the albumin excreted in severe destructive processes of the kidneys or in affections of the urinary passages originates from the renal substance itself or from the leucocytes that may be excreted. Every albuminuria of high degree is referable to alteration of the renal filter as regards the albumin bodies of the blood; on the other hand not every albuminuria indicates nephritis, nor severe organic alteration of the kidneys.

On ingestion of large amounts of heterologous albumin, this may be excreted through the kidneys (egg albumin) though this form of albumin (alimentary) has no essential practical significance.

Albuminuria of slight degree occurs in numerous febrile states (febrile albuminuria); it is probably caused less through the rise of temperature than by the toxic agent producing the fever. In affections of the urinary passages without involvement of the renal parenchyma, the albuminuria likewise is only slight. The renal pelves also are to be included in the urinary passages. The causes are stone, tumors, inflammations, transitory compression of the ureters and renal pelvis. On the other hand, in general congestion resulting from retarded circulation of the blood in the kidney, such alteration may occur that the amounts of albumin excreted may be extraordinarily large. An error often made, especially by the inexperienced, is the decision of the existence of a nephritis on the basis of the degree of the albuminuria. Further, it is important to know that nervous influences may alter the permeability of the kidneys for albumin. In epilepsy, head trauma, etc., albuminuria (occasionally also sugar) occurs directly

in conjunction with the trauma or paroxysm. Pressure on the kidneys and dislocation of organs may likewise cause slight albuminuria.

Palpatory Albuminuria. If a tumor is felt in the region of the kidney and after intense palpation the previous non-albuminous urine has albumin, it speaks in favor of the palpated tumor being connected with the kidney.

Exact quantitative estimation of the amount of albumin is of no great importance; it is a frequent error to judge the severity of the affection from the amount of albumin.—*Brook's Clinical Misc.*, 1916.)

Sulphates.

The approximate amount of etherial sulphates excreted can be learned by test tube reaction. The urine is first weakly acidulated with acetic acid and the preformed sulphates precipitated with barium chloride as barium sulphate and filtered off. The etherial sulphates are in the filtrate. To split the H_2SO_4 from the conjugates (cresol, etc.), the filtrate is treated with concentrated HCL and boiled. If necessary more barium chloride is added. The now liberated H_2SO_4 is this precipitate. Comparison of both precipitates gives an idea of the amount of etherial sulphates. (Important in phenol poisoning, etc.—(*Brook's Clin. Misc.*)

In rare cases of sepsis with a high degree of leucocytosis there is a marked excretion of leucocytes with the urine *without* purulent affection of the kidneys or urinary passages.

Emmert makes a valuable clinical contribution in reference to the demonstration of occult blood in the stomach contents and stools in cancer of the stomach. He found occult blood in twenty out of twenty-one cases examined. No other affection shows such an incidence. As the symptom is a very early one it should be present when the patient first comes to consultation. In one case a positive result was obtained in four weeks after the beginning of the symptoms. Operation revealed an induration. In another case the presence of cancer was revealed in a clinical picture of gall stone disease. Occult blood in the stomach contents excludes an intestinal lesion. The procedure usually employed is the guiac test; in fact a positive guiac points strongly to cancer while a negative guiac—even a single test—practically excludes cancer. Applied in cases of chronic ulcer and ulcer scars, the appearance of blood marks a transition to cancer. (*Münchener Medizinische Wochenschrift*, March 7, 1916.)

Microscopic Examination of the Urine.

Microscopic examination of the urine is directed to recognition and characterization of the urinary sediments. Inspection with the unaided eye should always precede such examination. Normal urine is clear and deposits a slight sediment only after long standing. Pathological urine may be cloudy throughout, or individual crystalline or amorphous deposits or organic constituents may be recognizable in the clear urine. For example, in nephritides, cystitis and pyelitis and also in phosphaturia strongly cloudy urine sometimes is excreted which at once can be characterized by simple reactions. In the presence of uric acid concrements in the urinary passages or conglomerations of free uric acid may be excreted which, being specifically heavy, at once sink to the bottom of the vessel. In chronic gonorrhea tripperfäden or floaters sometimes are seen floating in the clear urine; and in tuberculosis of the urinary tract often small caseous fragments. Such elements are best secured with a pipette and at once examined microscopically.

The urinary sediment is deposited either spontaneously on standing for some hours in a conical glass, or it is precipitated quickly by centrifugation. The sediment is collected with a pipette, a small number of drops run upon a clean glass slide and spread out into a thin uniform layer for examination. Place the slide upon the stage of the microscope and examine the sediment without a cover glass.

In search for casts the method of examining the sediment under a cover glass and with high power lens and condenser often gives negative results, even when quite a number of casts are present in the specimen under examination. Consequently, urine sediment should always be examined first with low power lens ⅔ and high eye piece 1 inch, the substage lowered, or, in the absence of this attachment, the mirror tilted so as to avoid too brilliant illumination. The condenser should be removed and be replaced by the so-called cap-diaphragm, or if this is impractical the iris diaphragm over the condenser should be closed to a small perforation to shut off the too strong light furnished by the condenser. Use the plane, not the concave mirror. If these precautions are not observed, the delicate hyalin and finely granular casts and so-called cylindroids (the true forms of which have the same significance as casts) will often be overlooked, and the microscopic examination in this respect pronounced negative.

Usually, a moderate amount of practise will enable one to determine the character of the casts with ⅔ objective and 1 inch eyepiece. Should there be any doubt, however, as to the exact nature of the casts seen, place the casts precisely in the center of the field of the low power lens, raise the substage to the level of the under side of the slide, change to the high power 1/6 lens and concave mirror and gently lower the lens by means of the coarse adjustment until the object comes into view. If the lenses are well centered this can be easily done. As soon as the shadow of the object comes into view, change to the fine adjustment. By gentle movement of the fine adjustment, details can now be studied. The satisfactory examination of renal elements blood, pus corpuscles, etc., when present in small numbers, requires the high power lens, concave mirror, and full illumination. Here, also, a cover glass is not necessary, though there is no objection to its use if the sediment is abundant or has been concentrated by appropriate methods of sedimentation (centrifuge). When present in large amounts pus and blood can readily be made out with low power. Examination for renal elements should always be conducted with high powers. These are always difficult of recognition, and without other signs can rarely be positively identified as renal elements on the basis of morphology alone.

Should the organized elements of the urine sediment be obscured by the presence of phosphates or alkalin urates, a few drops of acid will clear them away; if amorphous urates are the disturbing element, gently the slide of urine will dissipate them. A few drops of caustic alkali solution will also clear up the urates.

For preservation of urine sediment, a 1 per cent. solution of osmic acid can be used. A discussion of organized urinary sediments will follow in a later issue —(*Brooks Clin. Mic.*, 1916.)

62 Pierrepont Street.

From the results of 200 cases of ocular syphilis treated at the Lariboisière with salvarsan and neosalvarsan, he believes they are chiefly efficacious in acute uveal affections of the anterior segment of the eye, particularly in those of recent syphilis.

Special Article

SHAKESPEARE AND MEDICINE.

Shakespeare was not a physician, although he possessed much knowledge of medicine and its many branches. However, if we are to accept the dictum of an obscure western judge, Shakespeare was not a poet at all and Lord Bacon is responsible for the varied writings which have been ascribed to the bard of Avon for 300 years.

Despite the strenuous endeavors of notoriety seekers to attract attention to themselves, the great majority of people will continue to regard William Shakespeare as one of the world's greatest literary geniuses.

The tercentenary of Shakespeare is especially interesting to medical men, on account of the poet's familiarity with medicine. A careful study of his various works shows hundreds of references to prove his knowledge of things medical. Much of this has been painstakingly set down by Dr. J. W. Wainwright* and many of our quotations will be from his altogether excellent compilation. Shakespeare touched upon many subjects of a medical nature, including our present subdivisions of medicine, surgery, mental and nervous diseases, obstetrics, therapeutics, anatomy, physiology, hygiene, dietetics, medical jurisprudence and pharmacy.

Malaria was prevalent in many parts of England and is often mentioned in the poet's writings. Here are several quotations:

Buckingham:

An untimely ague
Stay'd me a prisoner in my chamber, when
Those suns of glory, those two lights of men,
Met in the Vale of Andren.
—*King Henry Eighth, Act I, Sc.* 1.

King Richard:

* * * a lunatic lean witted fool,
Presuming on an ague's privilege,
Dar'st with thy frozen admonition
Make pale our cheek; chasing the royal blood,
With fury, from his native residence.
—*King Richard Second, Act II, Sc.* 1.

Macbeth:

Hang out our banners on the outward walls;
The cry is still "They come." Our castle's strength
Will laugh a siege to scorn: here let them lie,
Till famine, and the ague, eat them up.
—*Macbeth, Act V, Sc.* 5.

Mrs. Quickly: As ever you came of women, come in quickly to Sir John: Ah, poor heart! he is so shaked of a burning fever, quotidian tertian, that it is most lamentable to behold.

Pistol: His heart is fracted and corroborate.
—*King Henry Fifth, Act II, Sc.* 1.

Typhus fever was known as the red plague in the bard's day. Of it he says:

Volumnia:

Now the red pestilence strike all trades in Rome
And occupation perish!
—*Coriolanus, Act IV, Sc.* 1.

Caliban:

You taught me language; and my profit on't
Is, I know how to curse: The red plague rid you,
For learning me your language!
—*Tempest, Act I, Sc.* 2.

As now gout was recognized as a most distressing condition over 300 years ago, as witness:

Falstaff: I can get no remedy against this consumption of the purse: borrowing only lingers and lingers it out, but the disease is incurable. * * * A pox of this gout! or, a gout of this pox! for the one, or the other plays the rogue with my great toe. It is no matter if I do halt; I have the wars for my color, and my pension shall seem the more reasonable. A good wit will make use of anything; I will turn diseases to commodity. —*Part Second, King Henry Fourth, Act I, Sc.* 2.

* The Medical and Surgical Knowledge of William Shakespeare. By J. W. Wainwright, M. D. Published in 1915 by the author.

Dr. Wainwright thinks this is unquestionably an allusion to the antitoxic effect of one septic substance when brought into contact with another:

Benvolio:

Take thou some new infection to the eye,
And the rank poison of the old will die.
—*Romeo and Juliet, Act I, Sc.* 2.

The search for some means to not only bring about immunity, but the application of one poison to counteract another, dates back to Galen, who used the flesh of the viper as an antivenom, while Mithridates sought to fortify himself against disease by taking the then known antidotes, as well as experimenting upon condemned criminals, finally rendering, we are told, both himself and them immune to snake bite by taking the blood of animals which had been fed upon venomous snakes. Andromachus, physician to Nero, as well as other notables, resorted to these same expedients. Dioscorides advised those bitten by mad dogs to drink the blood and eat of the liver of the animals which had bitten them.

Shakespeare recognized the infectiousness of disease, as for example:

Falstaff: It is certain that either wise bearing or ignorant carriage, is caught as men take diseases, one of another: therefore, let men take heed of their company.
—*Part Second, King Henry Fourth, Act V, Sc.* 1.

Helena:

Sickness is catching; O, were favor so,
Yours would I catch, fair Hermia, ere I go.
—*Midsummer Night's Dream, Act I, Sc.* 1.

Evidently the analysis of urine was practised in those early days, for we find this:

Falstaff: Sirrah, you giant, what said the doctor to my water?

Page: He said, sir, the water itself was a good healthy water; but for the party that owned it he might have more diseases than he knew for.
—*Part Second, King Henry Fourth, Act I, Sc.* 2.

Surgery was also known to the bard:

Menenius: Where is he wounded?

Volumnia: I' the shoulder, and i' the left arm. There will be large cicatrices to show the people, when he shall stand for his place. He received in the repulse of Tarquin seven hurts i' the body.
—*Coriolanus, Act II, Sc.* 1.

Iago: What wound did ever heal but by degrees?
—*Othello, Act II, Sc.* 3.

Thersites: Now the rotten diseases of the south, the guts griping, ruptures, catarrhs, loads of gravel i' the back, lethargies, cold palsies, raw eyes, dirt-rotten livers, wheezing lungs, bladders full of imposthume, sciaticas, limekilns i' the palm, incurable bone-ache, and the rivelled fee-simple of the tetter, take and take again such preposterous discoveries.
—*Troilus and Cressida, Act V, Sc.* 1.

Syphilis was called "French crown," pox or "malady of France," in Shakespeare's time and many references to the disease are found. Spital is hospital.

King Henry: Indeed, the French may lay twenty French crowns to one, they will beat us; for they bear them on their shoulders; but it is no English treason to cut French crowns, and to-morrow the king himself will be a clipper.
—*King Henry Fifth, Act IV, Sc.* 1.

Pistol:

News have I
That my Nell is dead i' the spital of malady of France.
—*King Henry Fifth, Act V, Sc.* 1.

First Clown: 'Faith, if he be not rotten before he die, (as we have many pocky cases now-a-days, that will scarce hold the laying in,) he will last you some eight year, or nine year; a tanner will last you nine year.
—*Hamlet, Act V, Sc.* 1.

Domestic difficulties were the causative agents of insecurity, even in the days of Shakespeare. The following quotation touches upon hydrophobia, melancholia, insomnia and indigestion.

Abbess:

And therefore came it that the man was mad:
The venom clamours of a jealous woman
Poison more deadly than a mad dog's tooth.
It seems, his sleeps were hinder'd by thy railing;
And thereof comes it, that his head is light.
Thou say'st, his meat was sauc'd by thy upbraidings:
Unquiet meals make ill digestions,
Thereof the raging fire of fever bred;
And what's a fever but a fit of madness?
Thou say'st his sports were hinder'd by thy brawls:
Sweet recreation barr'd, what doth ensue,
But moody and dull melancholy,
Kinsman to grief and comfortless despair,
And, at her heels, a huge infectious troop
Of pale distemperatures, and foes to life?
In food, in sport, and life-preserving rest
To be disturb'd, would mad or man, or beast:
The consequence is then, thy jealous fits
Have scar'd thy husband from the use of wits.

—*Comedy of Errors, Act V, Sc.* 1.

Observe this reference to epilepsy in Julius Caesar.

Cassius:

He had a fever when he was in Spain,
And, when the fit was on him, I did mark
How he did shake: 'tis true, this god did shake:
His coward lips did from their color fly;
And that same eye whose bend doth awe the world,
Did lose his lustre: I did hear him groan:
Ay, and that tongue of his that bade the Romans
Mark him, and write his speeches in their books,
Alas! it cried, *Give me some drink,* Titinius;
As a sick girl.

—*Julius Caesar, Act I, Sc.* 2.

Cassius: What! did Caesar swoon?

Casca: He fell down in the market place, and foamed at the mouth, and was speechless.

Brutus: 'Tis very like: he hath the falling sickness.

—*Julius Caesar, Act I, Sc.* 2.

Obstetrical references are many in Shakespeare's works, as may be seen:

Costard: Faith, unless you play the honest Trojan, the poor wench is cast away: she's quick; the child brags in her belly already; 'tis yours.

—*Love's Labor Lost, Act V, Sc.* 2.

Gloster:

For I have often heard my mother say
I came into the world with my legs forward:
Had I not reason think ye, to make haste,
And seek their ruin that usurp'd our right?
The midwife wondered: and the woman cried,
"O Jesus bless us, he is born with teeth!"

—*Part Third, King Henry Sixth, Act V, Sc.* 6.

Macduff:

————, Macduff was from his mother's womb
Untimely ripp'd.

—*Macbeth, Act V, Sc.* 7.

The bard was acquainted with apothecaries, drugs and pharmacy:

Bid the apothecary
Bring the strong poison that I bought of him.

—*Part Third, King Henry Sixth, Act II, Sc.* 3.

I would the milk thy mother gave thee when thou suck'dst her breast had been a little ratsbane (arsenic) for my sake.

—*King Henry Sixth, Act V, Sc.* 4.

I had as lief they would put ratsbane in my mouth as offer to stop it with security.

—*Part Second, King Henry Fourth, Act I, Sc.* 2.

Proteus:

When I was sick, you gave me bitter pills;
And I must minister like to you.

—*Two Gentlemen of Verona, Act II, Sc.* 4.

The poisonous simple sometimes is compacted
In a pure compound; being so applied,
His venom in effect is purified.

—*Lucrece, V,* 76.

Dromio of Syracuse: I have bought the oil, balsamum and aqua vitae.

—*Comedy of Errors, Act IV, Sc.* 1.

Ophelia: There's fennel for you and columbines.

—*Hamlet, Act IV, Sc.* 5.

Iago:

Not poppy, nor mandragora,
Nor all the drowsy syrup of the world,
Shall ever medicine thee to that sweet sleep
Which thou owedst yesterday.

—*Othello, Act III, Sc.* 2.

Juliet:

And shrieks like mandrakes torn out of the earth,
That living mortals, hearing them, run mad.

—*Romeo and Juliet, Act IV, Sc.* 3.

Macbeth:

What rhubarb, senna, or what purgative drug
Would scour these English hence?

—*Hamlet, Act V, Sc.* 3.

The anatomists of Shakespeare's day believed the liver to be the seat of courage and love, hence the poor opinion Sir Toby held of Sir Andrew Aguecheek:

Sir Toby: For Andrew, if he were opened, and you find so much blood in his liver as will clog the foot of a flea, I'll eat the rest of the anatomy.

—*Twelfth Night, Act III, Sc.* 2.

Shakespeare was apparently aware of the circulation of the blood, although, according to history, Harvey did not publish his discovery until 1628, after Julius Caesar and Hamlet had been written:

Brutus:

You are my true and honorable wife;
As dear to me as are the ruddy drops
That visit my sad heart.

—*Julius Caesar, Act II, Sc.* 1.

———— Holds such an enmity with blood of man
That swift as quicksilver it courses through
The natural gates and alleys of the body;
And with a sudden vigor it doth posset (coagulate)
And curd, like aigre (acid) droppings into milk,
The thin and wholesome blood.

—*Hamlet, Act I, Sc.* 5.

He placed the age of puberty at 14 years:

Capulet:

My child is yet a stranger in the world;
She hath not seen the change of fourteen years.
Let two more summers wither in their pride,
Ere we may think her ripe to be a bride.

Paris:

Younger than she are happy mothers made.

Capulet:

And too soon marr'd are those so early made.

—*Romeo and Juliet, Act I, Sc.* 2.

Shakespeare evidently believed in temperance:

Adam:

Though I look old, yet I am strong and lusty;
For in my youth I never did apply
Hot and rebellious liquor in my blood;
Nor did not with unbashful forehead woo
The means of weakness and debility;
Therefore my age is as a lusty winter,
Frosty but kindly.

—*As You Like It, Act II, Sc.* 2.

It would be possible to carry out to a most extended degree the quotations showing Shakespeare's marvelous grasp on the intricacies of medicine, as it was understood in his day, but space forbids. It may be well to end this brief and incomplete abstract with his remarkable summing up of life from birth to senility:

Jacques:

All the world's a stage,
And all the men and women merely players:
They have their exits, and their entrances;
And one man in his time plays many parts,
His acts being seven ages. At first, the infant,
Mewling and puking in the nurse's arms;
Then the whining school-boy, with his satchel,
And shining morning face, creeping like snail
Unwillingly to school; and then, the lover,
Sighing like furnace, with a woeful ballad
Made to his mistress' eyebrow; then, a soldier;
Full of strange oaths, and bearded like a pard,
Jealous in honor, sudden and quick in quarrel,
Seeking the bubble reputation
Even in the cannon's mouth: and then, the justice;
In fair round belly, with good capon lin'd,
With eyes severe, and beard of formal cut,
Full of wise saws and modern instances,
And so he plays his part: The sixth age shifts
Into the lean and slipper'd pantaloon;
With spectacles on nose, and pouch on side;
His youthful hose well sav'd, a world too wide

For his shrunk shank; and his big manly voice,
Turning towards childish treble, pipes
And whistles in his sound: last scene of all,
That ends this strange eventful history,
Is second childishness, and mere oblivion;
Sans teeth, sans eyes, sans taste, sans everything.
—*As You Like It, Act II, Sc. 7.*

The Physician's Library

Body and Spirit. By John D. Quackenbos, M. D., New York: Harper & Brothers, 1916.

Body and Spirit (or Every Man His Own Devil) is a compilation of facts based on twelve thousand intimate experiences with the subconscious mind in extra-planetary life. It deals, if you please, with prescience, retrocognition, x-ray vision, clairvoyance, clairaudience, thought transference, telepathic interaction, the control of disease, the transformation of character, the evocation of esthetic sensibility and moral force, transcendental psychic phenomena, and the psychologic proof of immortality. What?

A wide range of phenomena is covered by the author. The bewitchment of rocking chairs and cradles, ladies who are embarrassed in church or the theatre by noises coming from under their chairs, people with telepathic powers so great that messages are received accompanied with an audible whir in the right ear, and seers so successful in predictions that they are employed by fire insurance companies to pass on their risks constitute some of the topics.

The gifted author states on page 247 that the death of his wife was predicted by a Scotch lady three years before the occurrence of that sad event. He fails to say how long the lady gave Mrs. Quackenbos to live. The book is rich in many statements equally naive.

Dr. Quackenbos's deep insight into the body and spirit may be gauged in such definitions as the following: "By abnormal personality I mean a personality made up of psychic atoms in which there is not the proper coherence, just as a so-called normal personality is a personality made up of perfectly cohering psychic atoms or parts."

The author's own remarkable powers may be judged by the following incident: "Once a strange presence went with me into the chamber of death and enabled me, through the medium of an imperative command, to save a girl given up as dead. This lady told me not many days since that when I entered her room in obedience to a request made in her delirium, a 'rushing force' came with me that turned her back to life, and was distinctly felt by the family in another apartment."

This work is published by Harper and Brothers and is one more refutation of the canard that the higher forms of literature are denied exploitation in this country.—A. C. J.

Operative Gynecology. By Harry Crossen, M. D., F. A. C. S., Associate in Gynecology, Washington University Medical School. Cloth, 670 pages, 707 original illustrations. Price, $7.50. St. Louis: C. V. Mosby Company, 1915.

Crossen's book is the best and only real operative gynecology in the English language. He has attained what he started out to do, i. e., he gives us a clear picture of the indications and limitations of each operation. In the technique he has so clearly illustrated every step that one can hardly fail to see what is meant. Special mention should be made of his chapter on "Retro-displacements" which stands out, even in this wonderful book, as a masterpiece. The illustrations are clear and well done.

The Gynecology of Obstetrics. By David Hadden, M. D., F. A. C. S. Cloth, 200 pages. Illustrated. $3.50. New York: The MacMillan Company, 1915.

This book fills no place in obstetrical literature. It contains nothing new and the old material is not presented in such a form as to be of value. The illustrations are from anatomical drawings, poorly done and show nothing, as they need explanatory notes.

Man—An Adaptive Mechanism.. By George W. Crile, F. A. C. S. New York: The Macmillan Company, 1916.

In Man—an Adaptive Animal, Crile marshals a wealth of data from the laboratory, the sick room and the clinic of life to sustain his postulate of the kinetic system. Of especial interest is his argument regarding the part played by acute and chronic shock as a disease factor. Traumatic shock, psychic shock, toxic shock, infection shock and anaphylatic shock are the chief etiologic divisions. Chronic shock is due to continuous abnormal activation of the kinetic system, and according to the particular organs involved and the manner of their involvement we may have neurasthenia, insanity, epilepsy, Graves' disease, myxedema, goiter, cardiovascular disease, diabetes, nephritis, apoplexy, or acute acidosis. The chronic diseases result from the excessive work thrown upon certain organs for the elimination of the superabundant acid products of energy transformation, rather than from the energy transformation itself.

The book is divided into three parts, a general consideration of biologic adaptation and ascent of man, the mechanisms of adaptation, and the biologic interpretation of phenomena of health and disease. There are eighty-eight illustrations, mostly photomicrographs. The style is what might be called popular, the work being addressed to all classes of readers, and the writer has succeeded very well in presenting simply and lucidly much technical data.

Nothing in life but is dreampt of in this medical Horatio's philosophy. Around the postulate of the kinetic drive all the beings of the universe are made to revolve. It is an all-inclusive doctrine that accounts for the continuity of life itself, for health and happiness, and for disease and death as well. It elucidates all the mechanisms, including even those concerned in the fabrication of thought and the play of the emotions, in the complete life cycle of the individual from conception to death, and conception itself is not slighted. Why should this gifted thinker's metaphysics be halted by death, which only rounds life in a litle sleep? Death may be only the kinetic drive's low speed. Drummond wrote of natural law in the spiritual world; why should we be denied a treatise on the kinetic drive in that celestial demesne?

We appear to be face to face with a new medical system, destined for a little while to mould our thought and practice until supplanted by another. It is an inevitable cyclic phenomenon, the wave-action of genius. It is common to all intellectual progress. In the ancient world we saw Socrates, Plato and Aristotle following each other: so also Æschylus, Sophocles and Euripides. In Germany we saw Kant, Goethe, Schopenhauer and Nietzsche. There also we saw Mozart, Beethoven and Wagner. And out of the pen of Voltaire came the sword of Bonaparte. In medicine to-day it is Crile, outstanding successor in the cycle of genius to Hippocrates, Galen, Avicenna, founders of defective systems that none the less were mighty forces in the march of progress to ever higher ground. Let us be glad that it is an American who again storms heaven for a bit of the Promethean fire.—A. C. J.

Practitioner's Medical Dictionary. By George M. Gould, M. D. Third edition, cloth, 962 pages, price $2.75. Philadelphia: P. Blakiston's Son & Co. 1916.

The latest edition of this dictionary includes nearly 71,000 words, which take in not only the words belonging to medicine but to the allied sciences. The book has been entirely reset and about 20,000 new words have been added. One advantage is the fact that every word is found in its alphabetical place, and such types of words as would come under "symptom," "test," "reaction," and so forth, are not placed under one heading. The book, despite the great number of words, is published on a particular grade of paper which brings the weight to a trifle over 2 lbs., and gives the volume much additional value on this account. This dictionary will continue to faithfully serve the profession as it has for a number of years.

International Clinics, Volume I, 26 Series. Edited by H. R. M. Landis, M. D., of Philadelphia. Cloth, 326 pages. Philadelphia and London: J. B. Lippincott Company. 1916.

The contents of this volume are included under the headings on treatment, medicine, neurology, public health, pathology, gynecology and surgery, and the 17 articles presented are of a practical nature and such as the physician comes in contact with in his daily work.

The Basis of Symptoms. By Dr. Ludolph Krehl, of the Medical Klinik, Heidelberg. Translated by Dr. A. W. Beifeld, Northwestern University Medical School. Cloth, 517 pages, $5.00 net. Philadelphia and London: J. P. Lippincott Company. 1916.

The author discusses very broadly circulation, blood, respiration, digestion, nutrition and metabolism, fever, secretion of urine, nervous system, and infection and immunity. He takes up the pathological physiology of every symptom and carries it out to a logical conclusion.

The purpose of the book is to so inform the reader regarding the actual foundation of symptoms that a correct interpretation thereof may aid the practitioner in properly meeting the conditions as they arise. The author has most successfully carried out his purpose and has presented a book of undoubted value.

Be sufficient unto yourself, while remembering, too, that nothing sanctifies life like a great friendship.
—Matthew Woods.

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H. SHERIDAN BAKETEL, A.M., M.D.

ARTHUR C. JACOBSON, M.D.

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NEW YORK, JUNE, 1916

Shakespeare's Medical Knowledge.

Shakespeare's acquaintance with the medicine of his day was extraordinarily wide, for a layman. He is particularly happy in the domain of medical psychology, as revealed in *Hamlet, Lear* and *Macbeth*. His hints anent the circulation of the blood are of especial interest. In four of his dramas he suggests such circulation. It would seem that he must have had some knowledge of the partial contributions of Servetus, Columbus and Cesalpinus, which antedated the work of Harvey, in completely tracing the circulation. It is possible that Shakespeare knew Harvey and stole his thunder for use in the plays before that great physician's epochal announcement. Even Galen taught that the blood flowed from the great veins into the right heart, and Shakespeare makes Falstaff say, in the second part of *King Henry IV.*, "I have read . . . Galen." At any rate, it is extraordinary that Shakespeare should use such material—much the same as though some writer of the present day should draw upon the side-chain theory of Ehrlich. Yet do we not witness Bernard Shaw writing a play around Wright's opsonic therapy (*The Doctor's Dilemma*)?

Shakespeare fixes puberty in girls at fourteen; he hints at the menopause; he describes the clinical picture of tertiary syphilis; he refers to malaria; Cesarean section is alluded to; leg presentation in childbirth is mentioned; a definition of insanity is attempted; infection is lucidly discussed, as well as its prevention through proper drainage of wounds and the repair of abscesses from the bottom of their cavities; rigor mortis is described; Galen's theory of apoplexy is outlined; the three-ventricle theory of cerebral physiology is expounded; the pia mater is mentioned in three of the plays; the practice of vivisection is condemned; bleeding in the treatment of fevers is noted; a cure of empyema is recorded; the phenomena of death are impressively described; rabies and hydrophobia are clearly indicated, and the part played by the stomach in digestion and nutrition is set forth in a remarkable manner.

References are encountered to contagion, goitre, hemiplegia, chlorosis, erysipelas, hysteria, common disorders of digestion, fractures, dropsy, senility, convulsions, cicatrices, calculus, measles, psoriasis, catalepsy, opacities of the cornea and crystalline lens, harelip, gout, the plague, typhus, furunculosis, rheumatism, jaundice, leprosy, fetal movements, sciatica, scrofula, setons and issues, tuberculosis, eczema and ringworm.

Attempts have been made to prove that Shakespeare was a physician, or that the plays must have been written by one learned in medicine, like Bacon. They are not of great interest. We shall continue to wave them aside and hold fast to the real Shakespeare, dramatist, man of the world, intellectual Titan, utilizing all knowledge available in so far as it bore upon the composition of the plays. This mightiest of geniuses borrowed from all sources and spoke as statesman, as priest, as Roman orator, as soldier, and as magician. So let us, who would glimpse the true man, think of him.

Without wishing to stir up the Baconians, we take this occasion to state our conviction that their whole elaborate fabric of argument regarding the unfitness of the man Shakespeare to write the plays that bear his name falls to the ground when one *fact* alone is considered—that is, the intellectual companionship he sustained with the Mermaid group. It is definitely recorded that the members of this glorious coterie regarded him as a peer. This one fact effectually refutes all the labored efforts to prove him little more than a simple boor.

We accept our Shakespeare in the spirit of Dryden: "Shakespeare was the man, who, of all modern, and perhaps ancient poets, had the largest and most comprehensive soul. All the images of Nature were still present to him, and he drew them not laboriously, but luckily; when he describes anything, you more than see it, you feel it too. Those who accuse him to have wanted learning, give him the greater commendation: he was naturally learned; he needed not the spectacles of books to read nature; he looked inwards, and found her there."

Taps.

SAMUEL M. BRICKNER.

Dr. Brickner passed away at Saranac Lake on May 4th, after a long resistance against tuberculosis. He was graduated from the University of Rochester in 1888 and from the medical department of Columbia University in 1891, where he took the first Harsen clinical prize. He served on the house staffs of the Mount Sinai and Sloane Maternity hospitals. He served the former institution continuously until 1913, and achieved eminence as a gynecologist.

Our deceased colleague was associated for several years with Dr. Frank P. Foster in the editorship of the *New York Medical Journal*. At Saranac he created the monthly publication known as the *Medical Pickwick*, with which we all became familiar.

To what extent the disease from which Dr. Brickner suffered quickened his literary gifts we cannot guess. He himself did not think that the toxins of his disease had any excitative effect upon his mind, as we know them to have had in the case of Keats, Shelley,

Stevenson and many other writers. Yet we do not fancy that one so inspired would ever be willing to give the toxins any credit. Dr. Brickner may have been one of those highly gifted writers who, though tuberculous, seem to owe nothing to the toxins. And yet, like so many others, his creative labors coincided quite closely with the period of his illness, always a significant thing. He wrote inspired poetry at Saranac. This, however, might be explained in his case as the seizing of an opportunity to write denied to him in New York, where, like the rest of us, he was too busily engaged in practice to trim his quill very often.

What a *man* he was; tuberculous and exiled, he thought not of himself, but of how he could cheer his professional brethren in harness. Himself slowly dying, he made life pleasanter for others. They say that tuberculosis makes its victims selfish; that is its general tendency, for obvious reasons. The man who accepted tuberculosis as an opportunity to do others a service was one of those rare characters whom we should enshrine in our memories forever, for but few souls among us are so heroically moulded.

One of the last poems of this gifted singer is entitled "The Feast," and was written when he was deep in the shadows of the dark valley.

There is no more Lucullan feast than this
At which I daily sit;
Laughter and sunshine, love, a tender kiss—
These are the sweets of it.

If, by some chance, black storm clouds lowly bend
My unresisting head,
It is no symbol that my joy shall end,
For still my feast is spread.

A day will come with laughter just as sweet,
The sun will fill the air,
Love still be young, but other lips will meet;
I shall have had my share!

The Psychology of the Physician as a Wage Earner.

Dr. Charles W. Burr, professor of mental diseases in the University of Pennsylvania, is one of our wisest medical philosophers and master of a terse style. In his latest pronouncement he deals with the psychology of the physician as a wage earner (*New York Medical Journal*, March 11, 1916). He finds nothing in the physician which marks him off from his fellow men, save that as a class he is gentler toward the erring, kinder toward the unforunate. He finds nothing in him as a wage earner that differentiates him in any way from the rest of humanity. Burr denies that the physician is less successful in a worldly view than other men, excluding those whose sole business in life is to make money. According to the income tax reports, 35,000 citizens paid taxes last year on incomes between $10,000 and $15,000. The sociologists say that $10,000 a year means success. Burr thinks that about as many physicians proportionately are earning this income as business men. About the same percentage of physicians and business men fail financially. Burr does not find the physician more careless in business matters than other people. He has as much trouble in getting a bill out of his shoemaker as ever a patient did in getting one from his physician, but his shoemaker is a craftsman, too, and loves his work, and is just as fond and as proud of his handiwork as any surgeon is of his. The opinion that many doctors keep no accounts is exaggerated. Those who do not, do not because they are of that type of man, and no preaching will lead them to habits of business order. The man who uses x's and y's and curious hieroglyphs in his account book does not do so because he is a physician, but because he is careless or secretive. That physicians are prone to speculate, if they have the money, goes without saying, but gambling is a universal habit and not a psychological quality peculiar to medical men.

Nowadays the public seem to have a false and arbitrary classification in their minds with respect to the business side of medical men. We are made up of money makers and of those who are careless and indifferent about our earnings. Now, the truth, of course, is that nobody realizes better than the average physician that he is not above the operation of economic laws; he is no more and no less sane in business matters than anyone else, as Dr. Burr properly insists.

The doctor's alleged gullibility about purchasing books and other things is another familiar canard. He is merely on the lookout for anything that will enhance his usefulness as a practitioner and his culture as a man. He is a ready purchaser, using his best judgment, which is usually very good, of those things which stand out from the mass of worthless stuff submitted to him. We fancy that some of the loose talk on this score emanates from fakers who have been unsuccessful in unloading trash upon him. The younger men get stuck sometimes simply because they are young, and not because they are physicians. The older birds are as tough specimens as are anywhere encountered.

A Matter of Priority.

Kellogg, of Battle Creek, in the *New York Medical Journal* of March 25, calls attention to the fact that Allen's most excellent work on the control of glycosuria in diabetes by starvation was anticipated by Guelpa, in France, about six years ago. Guelpa appears to have worked the subject up quite thoroughly and to have demonstrated the value of the method to the satisfaction of some of his colleagues. It is difficult to understand why Guelpa's contribution has been so neglected, in view of its soundness and very great value. Perhaps it only goes to prove the prestige a great research institute confers upon its workers. They say the medical profession always accepts revealed truth relunctantly. This was true when Roswell Park emphasized it some years ago, but now we seem to be ready to accept anything at the hands of the institutes. Perhaps it still holds good in the case of the obscure worker. Nevertheless, it is well that there is one medical agency which does not suffer under the old handicap.

Psychological Curiosity Aroused.

If the study of sick minds and of delayed mental growth affords interest, may we remark quite aside, that the study of the minds of some of our captains of industry would be of greater interest? Whatever mental apotheosis has occurred to form these stars of the first magnitude, at least the most viciously jealous cannot assert them to be the creatures of chance!

Can immoral elements be associated with the product of a mind which displays so keenly organized one or more human faculties, as in the type of men we observe? Yes; if the faculties are exerted to oppose human evolution. But at least these men show such constructive genius as would entitle them to the name of builders, not destroyers. What have they built? To individualize, for example, the late Mr. Morgan created a system of finance; Mr. Carnegie, a system of manufacture, and Mr. Rockefeller, a system of

distribution. Can the creation of these three systems, which are necessary to the stability of social order ever be looked upon as selfish and dangerous? On the other hand, in other eras, minds such as these would have fought in ceaseless warfare for political dominion. Today they are actually pillars in the temple of liberty, by so much as their dominions are abstract, and in the intellectual world, and at the same time, contribute to the objective fundament of social order.

Why do our great captains of industry appear, or why are they said to appear to wrest from other men that which is wrongful to take? This is a simple thing, in so far as the fact remains that none of us are equally gifted. The general social order must rely upon average intelligences, and upon the guidance of those who are superior. Can these superiors be controlled? They are, by our actual need of them. We must have them, and they do not self-impose their agencies upon us. If this seems special pleading, at least the physiologist knows that organs in the body do not choose or pick. In the last analysis, the body politic must acknowledge a mastery of need and use.

We need great minds and use them, and their very routine is a symbol of our control of them, as in the body one part demands of another.

But what psychologic formulae do such supreme minds enjoy? It is probable that genius is not an inheritance. Early environment, very early accidental occurrences, which entrain in the mind a relation between certain associative tracts, giving the child a power to associate peculiarly well and with less effort, overcoming usual intermediary tracts or mental necessities of resolution, and so shortening effort, together with a possible relation to superior mental association of affection, gives genius its transcendant gifts.

Even as Freud has shown, that sexual influences become transmuted and ennobled and made part of great intellectual efforts, so that the "glow," the desire and the attainment, are rendered those of intellectual objects.

Could such permutations of children's minds be controlled, and musical or mathematical prodigies governed in their occurrence by our wills become the rule, not the exception?

The world uses and enjoys the products of genius, but gives little courtesy to the genius. The musician, the poet, the painter, the inventor, the financier, the statesmen, are equally derided, although for different reasons: the poet, because he does not make any money, and the financier because he does; the statesman, because he wants to control other men's destinies, and the painter because he is so inwardly-bound as not to be able directly so to influence men's acts; even if after years, or death, his works of art do so. The musician and the inventor does not win the world's approval, unless of the acrobatic turn of mind; composers who do not perform are not born to the world's applause.

Why are such facts true? Chiefly because what is gained in one direction is lost in another. The power to transmute, as sound, form, color, organization, means the association of one field of imaginative labor with another of emotion, enthusiasm, and effort. The study of these types leads us to hope that we may educate to some better purpose. Bees and ants seem able to create types. Can a type have any relation to the time and manner of sexual awakening? Is this controllable? What adolescence means, Stanley Wall has to some extent shown us.

Miscellany

CONDUCTED BY ARTHUR C. JACOBSON, M. D.

Researches in the Social Laboratory.

Young Morrison hadn't been in practice very long. He was a keen, observant fellow, and never wasted a moment while waiting for patients. Thus, being interested in all things, he fell into the habit of studying what he heard people talking about around him, in restaurants and other places. These studies puzzled him a good deal, because of the inanity and child-likeness of the things he heard said, until he brought up the subject one evening in a conversation with an older practitioner. Now this older practitioner was not a cynic philosopher, but a man who understood the worship of the god of things as they are. He could look at human problems without sentimentality and without transfiguring or degrading anybody. For example, he thought that women were neither more nor less moral than men, an idea which Morrison, just at the moment, couldn't glimpse, much less grasp, at all. He had a solution for the vacuity of men's minds, as revealed by their unconscious revelations in their talk.

They decided to do a little observing and study together, to collaborate, as it were, after the manner of Dante and Virgil, in the social laboratory which spreads out before all of us who would do original research work.

First they took in a little eating place in a busy district of retail stores, where the drivers and chauffeurs took meals. There the line of talk ran about like this: "Where yer goin' now?" "Goin' ter 1080 Snediker Avernoo." "Thet's near Utica Avernoo; I wuz up thet way last week."

They went to the older man's club and listened to the men talk as they played billiards or drank highballs. The talk was all about money-making and automobiles, with newspaper gossip about the war, although the source of information was not usually divulged, said gossip being retailed as the product of the speakers' own mighty minds.

Same thing in the Astor House café.

They mixed in with New Thought congregations, with church assemblages, and with Brooklyn Institute audiences. All very saddening, and not very dissimilar. The New Thought line of talk ran about like this in one place—a room in a fashionable hotel near the Grand Central Station. The speaker, one Harry Gaze, spoke on the subject of eternal youth to an audience of ladies most of whom were manifestly middle-aged. He did not reveal the secret except in a general way; details had to be taken up in classes, for which instruction a charge was made, of course. Mr. Gaze was a very young man in appearance; in fact, looked about twenty-five. A lady was heard to remark to her neighbors upon Mr. Gaze's youthfulness: "Mr. Gaze, you know," she said, "is really about seventy, though no one would take him for more than twenty-five or thirty. What a wonderful thing his system is." Her hearers were manifestly impressed.

The folks at the movies were very child-like.

The older man's solution was that most people never attained a mental age much beyond that of puberty. Such leisure as the masses had they utilized, not in cultural or creative activities, but the dissipation of the movies, idiotic automobile tours, unconstructive charity activities, machine politics, freak cult dopery and alcoholism, according to the types concerned. The

political accelerators kept a lot of the people busy. Feminine fashion freaks were signifiant.

War was discussed, of course. The older man thought it the most conclusive proof that the masses of men were but children, after all. Mentally full grown men could never be set at killing each other by ambitious and paranoid rulers, demagogues, profit-seekers and tuft and title hunters.

The setting up of the property fetish as against social justice and human rights, industrial feudalism, and the repressive laws against rational family limitation—these, thought the older man, were further counts against the intelligence of the masses which tolerated them or failed to comprehend their significance and effects.

Morrison reluctantly conceded the older man's points, but thought that education offered a remedy.

But the older observer stuck to his guns. The whole trend of the schools made for a standardized product which absolutely served the purposes of the god of things as they are. The Wyclifs, Wesleys and Newmans were exceptions. Of all classes college students were most carefully cloistered and protected against the seed planted by new ground breakers. Their training was based absolutely upon the theory that they were children who would never grow up. Moreover, this was sound theory, for most of them never would grow up. The educational system was well adapted to their needs, but it was not a remedy, for the disease in question was incurable. Society is a vast kindergarten, and the children constituting it will remain the sport of the Bernard Shaws, the victims of Kaisers, and their muddled affairs a practical joke of the gods.

The Mendels and Shakespeares and St. Francises are set farther apart from their fellow men than is the moron from the cretin. They stand alone and can never be understood or assimilated by the people at large. The kissing of the hems of their garments is a meaningless ritual.

Morrison began to perceive that all this was not pessimism, but laboratory-like evaluation, or social diagnosis, if you like. Comprehension of it merely gave a man perspective and understanding of one's relation to the great game of life. If one were good for anything such comprehension would spur and not cripple him. Failure to comprehend merely signalized one's inclusion amongst the soulless, automatically marking him off.

At the last account Morrison had definitely made up his mind to cast in his lot with the human aristocracy and to place the greatest possible distance between himself and the Peter Pans of the world, despite the handicap of his university training.

We verily believe that when at last he is subjected to the higher Binet-Simon test he will not be found infantile. And the same thing is true of others like him. What becomes of the Peter Pans is of no consequence on Parnassus, though they may be accorded places in cribs in the nurseries of what men call heaven.

Freak Medical Practice Laws.

We wonder how that amendment to the medical practice law is working that they passed out in Ohio last summer, which, it will be remembered, imposed on the State Medical Board the duty of providing for the licensure of practitioners of the various medical cults? The cults which the law was supposed to look after were naprapathy, chiropractic, hydrotherapy, spondylotherapy, mechanotherapy, neuropathy, electrotherapy, suggestive therapy, psychotherapy, magnetic healing, chiropody, Swedish movements, massage (all of which were specifically mentioned in the amendment), and "such other branches of medicine and surgery as the same are defined in Section 1286 of the General Code that may now or hereafter exist, except midwifery and osteopathy." Under the provisions of the amendment, the Board was directed to call to its aid "person or persons of established reputation or known ability in the particular limited branch in which the examination is to be given." These limited practitioners were to act as examining committees for the Board. Thus, to examine applicants for licenses to practise chiropractic, the Board was to appoint a committee of about three chiropractors to be known as the Chiropractic Examining Committee. The amendment provided that if there were in existence a state association or society of practitioners in any limited branch, such association should recommend the persons to be designated for this service by the Board. The Board, in its discretion, however, could reject such recommendations.

This sounds like a bad dream, but we presume the drama has been staged; perhaps burlesque would be a better word than drama. We should like to see the whole company lined up for action. It must be a sight to strike terror into the gods of healing. If there is a god of humor, even he would run shrieking from the sight. The shade of Molière must reach for a pen when this fearsome company convenes, and start a new medical satire.

Imagine the same law in operation in New York. Our metropolis boasts the finest and most alarming collection of freak practitioners in the country, mostly of the psychic persuasion. In the West they appear to be very materialistic; spines are kneaded and physical engines are employed. While we do many of these things in the East, there appears to be a keener desire to have the psyche kneaded. Cosmic thrills from a mystical fountain head somewhere in the zenith really outclass greasy manipulations by hands that "smell of mortality," as Lear has it. The psyche can be titillated very soulfully by a large lady in white with oodles of personality and spiritual unction, and speaking a mangled English, at five plunks a tit; it can also be stroked, punched and made to trot. Why, then, should one resort to a gross kneading of one's keel?

This is what our freak friends would like to put over. We wonder whether this awful thing shall ever come to pass? It might well happen, unless we have been sobered by the narrow squeak by which we were saved during Mr. Glynn's term at Albany, a salvation which we owe, not to ourselves, but to Mr. Glynn.

Medical education of the public—ha! ha! Who will educate the medical profession?

Patient—Doctor, what I need is something to stir me up—something to put me in fighting trim. Did you put anything like that in this prescription?

Doctor—No. You will find that in the bill.—*Judge.*

Powdered Potassium Permanganate in Wounds.

Belin has treated all wounds with the application of powdered potassium permanganate. Wounds quickly cicatrized under this treatment. In the very worst wounds of warfare this occurred within fifteen days. He finds that the permanganate soon ceases to be a very powerful antiseptic, and becomes a cicatrizing agent. This treatment is easy to apply; the powdered permanganate is non-toxic, antiseptic; its action is durable; it adheres to the wound, favors its cicatrization, destroys bacteria, and protects the patient from infection by anaërobic microbes, such as those of tetanus, gaseous gangrene, and hemorrhage septicemia.—(*Soc. de Pathol. Comparée de Paris,* Oct. 12, 1915.)

The American Association of Clinical Research

JAMES KRAUSS, M. D., Permanent Secretary and Editor.

THE CLASSICAL CAESAREAN OPERATION.*

ALONZO J. SHADMAN, M.D.
SURGEON TO FOREST HILLS HOSPITAL.
Boston.

I will not give an historical review of Cesarean sections, although such a review is very interesting. Thomas F. Green of Boston, *Boston Med and Surg. Jour.*, pp. 177-185, July 30, 1914, very admirably reviews this subject and gives his conclusions, based upon a remarkable series of some sixty-five cases performed by himself with but one maternal death.

Even as late as the days of aseptic surgery, there was but one indication for this operation and that was the absolute impossibility of a living child coming through the bony pelvis. These cases were submitted to operation by a very indifferent method, usually through a long incision with eventration of the uterus, in spite of which the results were excellent as far as having a living child and the mother's recovery after the operation were concerned. (I am referring to the clean cases where there was no harmful interference prior to the operation. Even today this method of performing the Cesarean operation is used by many. I consider such a proceeding—entailing, as it does, such unnecessary mutilation—of which more will be said later—as an insult to real surgery. And already we see articles written in representative medical magazines condemning what is called the indiscriminate performing of this operation, with the long hideous scar, with hernia, with accidental suspension of the uterus, with weakened uterine walls and danger of rupture of the uterus in subsequent pregnancy, general abdominal adhesions, etc.

If these results followed even in a small percentage of Cesarean operations, then I should say that the indications for this operation should be narrowly drawn. This is not true, however, and that is why I am going to make a plea for the classical operation.

What I will tell is based principally upon my results in performing this operation some sixty-six times without any maternal mortality and but one infant mortality, together with my observations of other cases done after a different method by other operators.

In the first place we know that a surgically clean incision will always heal, and that it does not harm anybody to make an incision through the abdominal wall. We also know that an incision through the uterine wall under the same aseptic conditions will always heal. And if these two mere incisions were all that constituted a Cesarean operation—however long or short they may be—it would be a very simple matter. Such is not the case. The more crude the technique the narrower grow the indications: the more classical the technique the wider grow the indications for this operation.

I cannot tell you *how* strongly I feel in this matter, and how absolutely inconceivable it is to me that any surgeon will make an incision from the typhoid cartilage to the pubes, will eventrate the uterus and its contents and then will stuff the abdomen full of gauze and towels, and who will open the uterus wide enough for a baby to literally fall out. That is why I wish to make a plea tonight for the classical operation.

* Presented to the Seventh Annual Meeting of the American Association of Clinical Research, Sept. 25, 1915, at Philadelphia.

The classical Cesarean operation is described in Johnson's text-book of Surgical Therapeutics. This operation was first brought to my knowledge in 1906 in an article written by Dr. A. B. Davis of New York, and I will describe this technique with some modifications in the minor details by myself.

The incision is a high one, usually entirely above the umbilicus, sometimes falling from 2-3 above to 1-3 below the umbilicus, usually about three to three and a half inches in length only. The abdominal wall is usually very thin in this locality, and a large incision not only is not needed, but is decidedly disadvantageous.

With the abdominal incision completed, one usually sees nothing but the fundus of the uterus. Bearing in mind the fact that the uterus usually lies either to the right or left of the median line, before making the incision the middle of the uterus is first determined. Into this median line the incision is made to correspond to the abdominal incision, perhaps a little longer. Before the incision is completed in its length a strong pair of three prong tenaculum forceps grasp the full thickness, with a firm hold, the cut uterine wall on each side at a point which would be a little below the middle of the uterine incision. The assistant then grasps the right hand forceps with his right hand and the left hand forceps with his left hand and applies upward and outward traction. This action prevents the entrance into the abdominal cavity of any amniotic fluid, and absolutely obviates the necessity of any gauze or towel.

With the completion of the uterine incision to a length sufficient to extract the head, if the sac has not already been ruptured accidentally, the sac is now ruptured, the operator's hand enters the cavity of the uterus, grasping the baby by both ankles and extracting the body as far as the axillae, and in this position the child is always facing the mother's feet. Each arm is then carefully extracted, and if the incision has been made just long enough, the head will come through by a firm pull with about the same resistance and stretching of the incision as would occur to an after-coming head through the vagina.

Time is not consumed by tying the cord after the child is extracted, cord forceps being applied and the cord severed between, the baby laid in the arms of a nurse who holds a sterile sheet of sufficient size to prevent soiling the hands of the operator.

Attention is next given to the placenta and membranes, the operator's hand being passed between the membranes and the uterine wall, and quickly detaching and removing all of the membranes and placenta. This membrane sometimes is quite adherent and quite difficult to strip off. I believe it is well to remove it all, although I have seen no bad results when some has been left behind.

The assistant all this time has been holding the uterine walls upward and outward by traction on tenaculum forceps so that the abdominal incision has been completely sealed and not a particle of amniotic fluid has soiled the peritoneum. A suturing of the uterine incision now begins. After trying various methods, I have finally adopted the following which is to my mind the quickest and best: I use one strand of No. 4 iodized catgut with a full curve Martin needle. I begin at the lower angle and place deep sutures in the uterine wall

sub-peritoneally, and also avoiding decidual surface about 3-8 inch apart, and continuing until the incision is closed, the suture continues back down the incision, closing very carefully the peritoneal layer of the uterus and ending at the lower angle where it began. Thus there is but one suture used, and no knots, occupies little or no time, and to my mind forms the very best method of closing this wound. If the suture is good, the chance of its breaking is practically nil, and even if it did break, a long running suture is far less liable to allow the tissues to separate than any other kind of suture because of the amount of friction brought to bear on any and all parts of it.

The abdominal incision is closed in the ordinary method in three layers. The advantages of this method are, of course, obvious. The incision in the uterus only large enough to allow the extraction of the child, and with some stretching at that, reduces to a minimum the chances of a ruptured uterus in any subsequent pregnancy. The incision in the abdomen is short and high, and there is practically no chance of a hernia. But the most important advantage in this technique is that it prevents the soiling of the peritoneum with amniotic fluid, meconium, etc., without the use of abdominal packs, sponges, towels, and which precludes the formation of adhesions.

One other advantage in using these tenaculum forceps is that they will stop almost all bleeding immediately, and especially when a large sinus or artery is opened the forceps may be applied there regardless of whether it is in the elective position or not. These sinuses are found when the placenta is attached beneath the incision. If the placenta is encountered it may be disregarded except as it is either cut through or pushed aside. In case the placenta is detached first, which is sometimes expedient to do, a clamp must be applied to the cord, and no time is lost in delivering the child. In all other events the cord must not be clamped until the head is delivered. In case the head presents at the incision either the forceps may be applied or the incision lengthened.

One can therefore readily see that with such a technique, the indications for the performance of this operation have broadened out considerably and one is almost tempted to use it as a matter of selection.

The indications vary from those of the absolute to the border-line cases, and even to those cases where it is a matter of election by the patient herself.

In a given case—remembering always that if a woman carries a fetus to full term she is entitled to a living child by some method—what are the indications for Cesarean operation? I wish to warn you from the start that evidence obtained from the pelvimeter alone is not to be relied upon. I mean by that, that if the measurement of a given pelvis fall below certain figures which makes it obvious that an ordinary sized baby cannot come through, *that* evidence is conclusive. Yet, if in another case the pelvimeter shows that the measurements are ample it is no sign that the Cesarean Operation is not indicated. The bones of some pelves are very thick, while others are thin. A small woman may be normally proportioned, but the father of the child may be a large, square-headed, broad-shouldered man, and while the pelvis of the woman may be plenty large enough in proportion to the rest of her skeleton, the child is simply too large to come through.

Exostoses, prominent sacral promontory, and various conditions may obtain which would be an indication for this operation that the pelvimeter would not show at all.

Other conditions which indicate Cesarean operations are eclampsia; threatened eclampsia; especially in the primipara; placenta-previa, either centralis or marginalis: centralis in both multipara and primipara, and marginalis more especially in primipara, the reasons being quite obvious, and myomata uteri.

Last year a woman was brought into Forest Hills hospital in a very exsanguinated condition, having been in labor but an hour with her first pregnancy. On examination, a condition of placenta previa centralis was found, and Cesarean operation was advised and accepted with results which we expected, recovery of mother and living child. The physician who brought the case then went back for another case, and found that in his absence another physician had been called and had attempted to deliver from below, a woman who also had placenta previa, and the result was that the mother bled to death and the child was killed during extraction.

If we were always able to compare results of different methods of treatment, as in these two cases which were probably identical, we would soon be able to know just what to do and what not to do.

In cases where no obvious reason exists for this operation, labor progresses to a certain degree and then ceases, the pains producing no further advancement. After several hours an examination is made and head found to be either not engaged or firmly impacted; what should be done? High forceps usually is the method, and what are the results? Mother torn and mutilated, baby either killed, maimed or bruised. Mother indifferently repaired and never the same again. Cesarean section is the method to be used in these cases. It is indicated in cases of persistent occiput posterior where a living child is *particularly* desired and if there is the least question of possible difficulty in delivering aftercoming head after podalic-version. This may be determined from experience in judging from appearances and palpation the relative size of fetus. It is indicated for women who have previously had a child living or dead after a long hard labor with forceps, with badly ruptured perineum which has healed kindly after repair. Also in primiparae who have reached the age of 38 or 40 and over, because in these cases the injury to the soft parts is far greater than the simple manipulation necessary in this operation, and especially when a woman conceives for the first time near the age of menopause she cannot take too many chances of losing what may be her last and only chance for a baby. Young girls unmarried who have been victims of seduction I believe should have the benefit of this operation and not have their lives ruined by carrying the indisputable proof of their misfortune.

I performed this operation on a young girl of 17 years where the hymen was quite intact. She was the victim of but one attack, and I believe that her being delivered in this way, (it all having been explained to her beforehand) will be the means of preventing an absolutely ruined life.

We must bear in mind also that a mother will give birth at one time to a ten-pound babe while at another time it may be a five-pound one or vice versa and while the one will come through all right the other one will not. I have one patient who was in the habit of producing large, square headed babies which could not be born except by this operation, and I was preparing for her fifth and had my assistants all ready and was about ready myself when a nurse came in and said, "Doctor, the baby is born." You can imagine how I felt until I saw the youngster, a three pounder! It could almost have come through a knothole. So, oftentimes the reverse is the case, and one must be guided by the prog-

ress of the labor in each case, and his experience in judging relative sizes of fetuses.

When there has been a lot of preoperative interference, long attempts of the uterus to empty itself, membranes ruptured, oft-repeated examinations, application of forceps, etc., we must be especially careful of our technique, and may have to modify it in order to prevent infecting the peritoneal cavity.

The only modification in cases of this kind is to make the incision large enough in the abdominal wall to eventrate the uterus and to handle the uterine incision with such care that no soiled contents from the uterus come in contact with the abdominal incision or the abdominal peritoneum, and after delivery of child and membranes the cavity of the uterus is thoroughly cleansed, after which the operators' gloves, instruments, etc., are changed and others used from a separate table which have been prepared for the occasion. It is all very well to know how to take care of these infected cases but, it is far better to know how to prevent cases of this kind, and while I do not wish to give a lecture on how to conduct obstetric cases, it seems to me that to repeat the admonition against too many examinations during the progress of labor would not come amiss.

If a woman is able to become pregnant and carry a child to any where near full term I can conceive of no possible condition that would prevent her being delivered of a healthy baby and at the same time her own health remain unimpaired, the only thing being necessary in any case is to be properly managed from the onset of labor, and in the proper management ofttimes it is as important to know what not to do as what to do. It is just as natural for a normal woman to have a baby as it is for her to eat her meals, and a normal woman could give birth to a baby with as little danger if she never saw a physician and with great deal less danger than if she saw some medical men. There are thousands of babies sacrificed every year on account of the ignorance of the attending physician.

In my own series of sixty-six cases the indications for this operation were: eclampsia with convulsions, threatened eclampsia, placenta previa, fibroid of uterus, ulcer of the vagina, congenital dislocation of hips with distorted pelvis, flat pelvis, varying degrees of justo minor pelves, unmarried girls, and women with their first pregnancy near the age of menopause. In a great majority of these cases the character of and lack of progress in labor determined the necessity of the operation, and it is in this class of cases that the large percentage of infant mortality occurs and it is also this class of cases which produces the greatest amount of mutilation to the mother.

In my series of cases there were no maternal deaths and only one infant was lost which was due to oft repeated attempts to apply high forceps and had I been sure that the child was dead in this case I would have done a podalic version.

If the profession at large could be made to realize how simple and safe this operation is, many more of these cases would be brought to the surgeon than are at present.

Saline Solution as a Dressing.

Lieut. Kemp, R. A. M. C., reports (*B. M. J.*) on the good results obtained from irrigating septic wounds with salt solution, which he has used frequently for the last three or four years in dressing ordinary flesh wounds with good results. The method employed for ordinary surface wounds is by dressing them with a piece of surgical lint soaked in a solution of sodium bicarbonate, the lint being then covered over by a layer of oil silk. This method promotes healthy granulations and a speedy repair of the damaged tissues.

SOME RESULTS OF AN OPERATION FOR RESECTION OF THE OVARIES.*

G. L. Monson, M.D.

INSTRUCTOR IN OBSTETRICS, MEDICAL DEPARTMENT, UNIVERSITY OF COLORADO; GYNECOLOGIST TO THE DENVER CITY AND COUNTY HOSPITAL; GYNECOLOGIST TO THE MERCY HOSPITAL.

Denver.

In reporting the results of an operation which has been useful in my hands, I desire to call attention to the fact that I make no claim for originality, nor do I profess to be a pioneer in this field of endeavor. It is no part of my purpose to bother you with tiresome statistics or point you to a long list of bibliography. I take it that you are as conversant with the recent literature as I myself am, a perusal of which will reveal the fact that in gynecology, as in other branches of our art, the observation and experience of different operators varies in wide limits from the ultra-conservative to the ultra-radical. There are those who advocate total extirpation of the ovaries in all pathological cases, while others advise conservatism in every or nearly every case. We are striving for the ideal and in our enthusiasm we are often carried beyond the bounds of reason. A seemingly successful method of treatment often proves to be an accident or unusual combination of circumstances, hence theories are being constantly discarded, facts that have been proven have been forgotten, well trodden paths are forsaken for the unexplored by-ways in the hopes of discovering a better route. The acknowledged truths of today become the objects of ridicule tomorrow.

My professional career began at about the time when the ovaries were blamed for every ill to which womankind was heir. They were therefore removed under any and all pretenses. The evil results of this practice were soon manifest and resulted in the swinging of the pendulum in the opposite direction or in other words where some ovarian tissue was preserved even if it was grafted in the abdominal wound. Principally, however, resection of the ovaries was mainly practiced and in many ways remedied the existing evil. The results of grafting the ovarian tissue into other parts of the body, particularly the abdominal wall, have, as you probably know, been more or less uniformly disappointing.

My early experience with resection of ovaries was anything but gratifying, for I am sure that I can safely say that far too many patients not only failed to obtain the desired relief, but were often worse, requiring a second operation for the remaining portion of the ovary, which in every instance was found to be badly cystic. From conversations with other surgeons, a study of the literature and the number of women admitted to my service at the City Hospital who had been previously operated by other members of the staff, I concluded that the results of resection were no less encouraging in other hands. I was that dissatisfied that I decided to abandon the conservative operation for the more radical. I was also impressed with the infrequency which pregnancy followed these operations and the sad, almost tragical fate of those to whom the last hopes of motherhood had been taken away made a profound impression upon me, as it needs must make upon all of us who are called upon to decide this very important question. No less a tragedy also is the unhappy victim of total extirpation for not only is she denied the possibilities of pregnancy, but the train of disagreeable symptoms that so often follow

* Read at the seventh annual meeting of the American Association of Clinical Research, Sept. 24, 1915, at Philadelphia.

in the wake of an enforced menopause make her an object of pity indeed. How many of us, after due deliberation trying to do our conscientious duty in attempting to preserve for the young woman at least the systemic function of the ovary, have later on, when the disagreeable symptoms returned, been the victim of unkind remarks by not only the patient and her friends, but also unscrupulous members of the profession, into whose hands they chanced to fall. In an effort to avoid these disagreeable results, and with hopeful anticipation, I began to do the operation which I report today. I feel quite sure that it was suggested or possibly detailed in some of the journals which come to my office. However, I have not the article at hand and can therefore not give due credit in this paper. This paper is based upon the results obtained in ninety-six cases operated by me principally at the City and County and Mercy Hospitals from January 1, 1913, to January 1, 1915. It includes only those cases in which both the Fallopian tubes were removed and where either the resection of both ovaries or one ovary entirely removed and the resection of the other was done.

To date there have been sixteen pregnancies in ten different women, and as many cases are comparatively recent I have hopes that the percentage will be larger. Of the ten cases one was delivered of twins, three had two pregnancies, one had three and the other five have been pregnant once each. The time is too short to say whether or not there will be others. I am going to give in some detail the history of the one that became pregnant three times, the one who had twins and a typical case which characterizes practically all the others, there being only minor differences in each instance.

There have been only three cases in this series, reoperated by myself, one of which died of pulmonary embolism on the evening of the fourth day after a very satisfactory post-operative recovery up to that time. As I have been in touch with at least eighty-five per cent., I am more than pleased with the results obtained as compared with my former experience.

Case One in Brief. Mrs. J. C. C., age 23, formally the wife of a dentist, been divorced two years. Family and previous history unimportant. Began menstruating at twelve years, of the twenty-six day type, always regular, moderate amount of pain first day. Married at seventeen. Shortly thereafter, noticed a burning pain on urination. Do not remember how long it lasted. Also noticed yellowish discharge. Became pregnant fourth month after marriage. Had abortion performed after two and one-half months. Later had attack of peritonitis. Was in bed six weeks. Suffered more with menses since. Lasted eight days and rather profuse.

Present Illness: Has been in bed for two weeks with pain and soreness in lower abdomen. Worse on left side radiates down left leg. Urination frequent but not particularly painful. Had some fever for a few days. Temperature has now been normal nine days. Examination negative except lower abdomen which is very tender on pressure, moderate distention noticed. Bimanually a very tender mass is easily felt on each side of the uterus which is retroverted and immovable. Upward pressure on cervix gives excruciating pain. Operation advised and accepted. Was admitted to Mercy Hospital at noon and operated the following morning. After the usual preparation an incision through the right rectus muscle revealed a mass on either side of the uterus to which it was adhered as well as all the neighboring coils of intestines. A very careful resection released the mass on the left side and disclosed an enlarged and badly cystic ovary intimately adherent to the mass which proved to be a greatly distended pus tube. The entire mass was removed. On the right side the tube was moderately distended but could be easily separated from the ovary and surrounding structures and was removed intact. The ovary was moderately enlarged and contained a few small cysts, about one-fourth was removed and the following technic of the operation which I am reporting carried out. An oval section of the right Cornua of the uterus is removed at the site of the junction with the fallopian tube equal to about two-thirds of the area of the resected ovary. A number one plain catgut doubled is threaded on a small round needle. The ovary is gently placed in approximately its normal position with the denuded area pointing upwards and the anterior edge is sutured to the posterior layer of the broad ligament along their contiguous edges for one-sixth of its circumference and the remaining portion being sutured to the edge of the denuded area of the uterus very similarly to the method of joining the coats of the stomach and intestines in a gastro-enterostomy. Then the ovary is turned over so that the denuded surface of the ovary and uterus are coapted and made secure with the same suture, being carried back as the gastro-enterostomy incision is completed this is also carried beyond the uterus so that the other sixth includes the anterior layer of the broad ligament. The same suture brings together the peritoneum over the two layers of the broad ligament from which the tube had been removed and the stump where the tube had been is buried as one would bury the stump of an appendix. This leaves no rough surface for adhesions. The ovary is assured of ample blood supply and is held well up so that it cannot become prolapsed. The toilet of the abdominal cavity is completed as in other pelvic operations and the abdominal wound closed with or without drainage according to the circumstances of the case that is to say that should pus be split in the free cavity I am very apt to place drainage through the culdesac for forty-eight to seventy-two hours. In this particular case there was no drainage used. The patient made an uneventful recovery, leaving the hospital at the end of fourteen days. Highest temperature recorded 99.8 F. on the second day.

Subsequent History: Menses appeared fifth week after operation and appeared each twenty-first day for four months when they ceased and in five weeks she began to have morning sickness. Not believing herself pregnant she gave it no thought until the second period was passed then she presented herself for examination which revealed the uterus enlarged indicating about the ninth or tenth week of gestation. She was so informed. She stated she would not go through with it as she was unmarried. She accordingly went home and induced an abortion by passing a catheter into the uterus. I was called and arrived just after she had passed a large amount of blood clots in which was the gestation sack of a ten weeks' fetus. My assistant was called who administered chloroform and the uterus was emptied and irrigated. She made a complete recovery and was about her household duties in one week. Three months later she again became pregnant and produced an abortion at the eighth week. Soon thereafter she married, missed the second period following marriage and in nine months was delivered of a seven-pound girl.

Case Two: Mrs. J. W. B., age thirty-four, admitted to my service at the County Hospital, June 20, 1913. Family history negative, also previous history unimportant until beginning of present trouble which dated back three years, previous to which she had born two children nineteen months apart. Three years ago had a miscarriage from lifting at the third month. Being in straightened circumstances she attempted to continue her work instead of seeking medical aid. After flowing several days she noticed a bad odor to the discharge. She had a severe chill followed by high fever, said it was 105. After two or three days gradually getting worse she was removed to the hospital where her uterus was cleared of considerable quantity of foul smelling debris. After a very stormy convalescence she at length returned to her work but never felt well, always had backache and pain in lower abdomen, worse at time of menses. Two years ago she began having sharp pains in upper right quadrant of abdomen radiating to back and right shoulder after which she would vomit. Attacks would recur every two or three weeks between which she felt fairly well except more or less indigestion. Pain would come on and end suddenly, usually received morphine to control it. Never had yellow jaundice or noticed the stools being clay colored. Came to hospital for falling of the womb and great deal of pain in pelvis which she attributed to lacerations at childbirth.

Examinations reveals tender area in right upper quadrant of abdomen, also lower abdomen, especially on the right side. Bimanually the uterus is found retroverted, adherent and immovable. Moderate laceration of the perinium and cervix is also noted. On account of the extreme thickness of the fat abdominal wall nothing farther could be elicited in the pelvis. She was prepared for operation the following morning. A right rectus incision revealed the pelvic organ enveloped in one mass of adhesions with a very fat omentum. After a slow and tedious dissection the tubes and ovaries were freed from surrounding structures. Each ovary contains several rather large crysts of which two or three of the larger were ruptured during the course of dissection. Both tubes, the right ovary and appendix were removed, while about one-half of

(*Continued on p.* 20.)

In

DIARRHEA OF INFANTS

There are three important rules that should be rigidly observed—

Stop at once the giving of milk in any form.
Thoroughly clean out the intestinal tract.
Give nourishment composed of food elements capable of being absorbed with minimum digestive effort.

A diet that meets the condition is prepared as follows:

Mellin's Food - - -	**4 level tablespoonfuls**
Water (boiled, then cooled) -	**16 ounces**

(Composition—maltose, dextrins, proteins and alkaline salts)
(Calories per fluidounce = 6.2)

Feed small amounts at frequent intervals

As soon as the stools lessen in number and improve in character, gradually build up the diet by substituting one ounce of skimmed milk for one ounce of water until the amount of skimmed milk is equal to the quantity of milk usually given for the age of the infant. *Do not give any milk fat until the baby has completely recovered.*

MELLIN'S FOOD COMPANY, BOSTON, MASS.

(*Continued from page 206.*)

the left ovary was sutured into the denuded left Cornua of the uterus, the same as in Case One. An examinaiton of the gall-bladder revealed cholilithiasis. Through another incision forty-two gall stones were removed and the gall-bladder drained. The abdomen was closed without drainage, save a cigarette to the fascia on account of the very fat abdomen. Convalescence was uninterrupted and very satisfactory. The patient left the hospital at the end of the three weeks. I never heard of her again until February, 1914, when she called at my office to determine why she had not menstruated for three months. On account of the previously mentioned thick abdominal wall, which had increased somewhat since the operation I could throw no light on her trouble. However, some months later she called to engage me for her confinement, she having made her own diagnosis. November twenty-third she was taken to Mercy Hospital, where after a rather prolonged labor she was delivered of twins, one boy and a girl, each weighing about six pounds.

The typical case, of which there are many, gives a history of infection with the gonococcus or other of the common organisms, following a miscarriage or labor. They have usually taken everything from prolonged local treatment in a doctor's office to patent medicines. Have had one or more attacks of pelvic peritonitis and finally, as a last resort, accept operation at which time the tubes are so badly diseased that they must be removed, and in most cases the ovaries are so badly affected that it becomes a question of great moment as to what is the best thing to do with them. If you leave a part of one or both and they continue to cause trouble you are censored and operations in general are decried. If you take both out you are apt to get in worse trouble. Since adopting the above operation I don't hesitate to leave at least a portion of one or both ovaries unless it be a very bad case at or near the physiologic menopause. If I am instrumental in helping some one to solve this always perplexing question, I will be more than repaid for the effort in getting up this report. I trust that the operation will prove as satisfactory to others as it has to me.

I am indebted to my associate, Dr. R. L. Drinkwater, and operating nurses at the City Hosiptal for their work in compiling and following up this series of cases.

Metropolitan Building.

Prevention of Vulvovaginitis in Children.

F. J. Taussig thinks, from study of 66 cases of vulvovaginitis in girls of from three weeks to twelve years, that the most frequent source of infection is from child to child and that the most common manner of its transmission is through the school lavatory. As special precautions for its prevention he advises (1) the instillation of a drop of 2 per cent. silver nitrate solution in the vestibulum vaginæ of all newborn girls whose mothers show evidence of gonorrhea, though probably not over 5 per cent. of the cases of vaginitis are infected at birth; (2) making vaginitis in children a disease reportable to the Board of Health; (3) instruction of parents of infected children through the visiting nurse regarding preventive measures to limit the infection, including the use of separate towels and wash-cloths, sleeping in a separate bed, care as to cleansing contaminated clothing, and special precautions in the use of the lavatory; (4) investigation by the visiting nurse as to the probable origin of the infection in each case with a view to excluding this factor from contaminating other children in the same house; (5) the adaptation of a U-shaped seat with low bowl and other precautionary measures to prevent the spread of infection through the public lavatories in schools, playgrounds, comfort-stations and tenements. Children cannot be relied upon to use paper coverings for lavatory seats, so the U-shaped seat should be used in addition. The height of the bowl should not be over eight inches where the lavatory is to be used by children of school age.—(*Am. Jour. Med. Sci., Vol. CXLVIII., p.* 480.)

Liberty and duty are inseparable terms. If I ought, I can.—KANT.

When you are well armed

with a **good** hypodermic syringe—
and we know of none quite so good as
our "Aseptic"—
and some **good** hypodermic tablets—
do **you** know of any better than those
we have been making these 30-odd years?—
you are prepared for emergency calls!
and well equipped with a syringe that
'always works and never leaks' and with
always dependable, perfectly soluble tablets—
hypodermics that are made and priced right by

SHARP & DOHME

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Chemists since 1860
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"The Ideal Tonic Reconstructive,"

says a well known physician, "is a malt extract that is sufficiently rich in diastase, maltose and other nutrient extractives to exert a marked influence on metabolic processes when taken into the body."

Many physicians have long realized this, but recent investigations emphasize as never before the almost specific utility of carbohydrates and diastase in a large proportion of nutritional disorders. As this fact has been established, the demand for a pure, high grade malt extract has extended, and in

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the medical profession have found a digestive tonic of broad usefulness. Made with the utmost care from the best and most carefully selected barley malt, for nearly half a century this pioneer extract of malt has been employed with conspicuous success in a wide variety of human ills characterized by nutritional decline, such as **incipient tuberculosis, diabetes, starch indigestion, neurasthenia, and many other forms of debility.**

In starch indigestion—the commonest of digestive derangements—**Trommer Extract of Malt** may be confidently relied upon to produce results of a most substantial and gratifying character.

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The positive and far reaching effects of **Trommer Malt Extract** in a class of cases that make up so large a proportion of every day practice readily account, therefore, for its increasing use, whenever a dependable tonic and reconstructive is needed.

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LISTERINE

In the treatment of Summer Complaints of Infants and Children

"The clinical basis of treatment is antisepsis and disinfection of the intestinal tract; not with a purpose to completely destroy the offending bacteria and their toxines, which we know to be neither possible nor necessary, but to assist the normal defenses of the body to gain the ascendancy."

"There are four principles of therapy which govern the treatment of these infections:

"(a) To give the gastro-intestinal tract physiological rest."
"(b) To remove as much as possible of the infective elements."
"(c) To stimulate natural defenses."
"(d) To reinforce these natural defenses with local antisepsis."

"By local antisepsis we can inhibit many of the pathogenic bacteria in the bowel before they enter the mucosa. The antiseptic agent must be selected with a view to certain requirements; for example, it must not be strongly acid. It must not coagulate mucin. It must not be astrigent. It must be easily soluble and not upset osmotic conditions, and finally it must be non-irritant and non-toxic."

"Listerine answers to all these requirements and furnishes an ideal agent of local antisepsis in these cases. It has the additional advantage of being compatible with almost any other medicinal agent with which the physicians may desire to administer it."

The above is abstracted from a pamphlet entitled

"Acute Intestinal Infections of Children"

a copy of which we shall be pleased to send to physicians upon request

Lambert Pharmacal Company, 2101 Locust St., St. Louis, Mo., U. S. A.

Accomplishments of the Navy Medical Corps.

In his address before the graduating class of the Naval Medical School on April 12, 1916, the Surgeon General of the Navy, Rear Admiral William C. Braisted, reviewed the work of the present administration of the Navy Department in so far as it affected the Medical Corps of the Navy. The Surgeon General said:

"During the past two years, the present Secretary of the Navy has advanced our service in the following items:

"1. He has recommended to Congress the increase of the Medical Corps from 347 to nearly 500, the first increase in 20 years and most urgently needed.

"2. He has provided in his personnel bill a substantial increase in the upper grades of the Medical Corps. No increase in these grades has been made since 1870, notwithstanding the tremendous growth of the service as a whole.

"3. He has established two of the finest Hospital Corps Training Schools in the world for the training of male nurses, and made provision for the increase in this Corps by nearly 11,000 men, an increase urgently demanded by the increase in the Navy, and has also provided a possible chance for members of this Corps to reach commissioned rank, thereby raising the efficiency and esprit of nearly 2,000 enlisted men in the Hospital Corps of the Navy.

"4. He has made provision for a new hospital ship for the Navy, which will enable us to build the first ship of this kind, designed especially for this purpose, and which will be a model for our country and the world. This one effort will, if granted by Congress, be of inestimable value to the Navy and to all other countries. It will provide our fleet and our service with a floating hospital for the care of the sick and injured of the Navy that will rival any metropolitan hospital in existence.

"5. He has established schools for the training of the native women of Samoa and Guam in nursing that already are giving most excellent results and are a most important humanitarian educational effort for these helpless people, promising, when completed, to be one of the noblest efforts made for the uplifting of any similar class of people.

"6. He has increased our appropriations to meet our necessities and to enable us to carry on our great work that extends not alone to the Navy proper, but to thousands of human beings attached to the service in various ways and extending to all parts of the world.

"7. He has permitted us to take an active part in the regeneration of Haiti by furnishing medical officers and nurses to care for the sanitary needs of the great work that is now in progress in Haiti and which ranks with one of our greatest humanitarian efforts.

"8. He has supplied already, and gradually will furnish our deficiencies in the many large hospital and medical organizations on shore, such as contagious units at Mare Island, Puget Sound, New York and Newport, and has furnished adequate and commodious homes for our nurses at Mare Island and Boston, thus adding to the content and efficiency of the women nurses. South of Norfolk and San Francisco our coast line is practically unprovided with hospitals for peace and war, but with a policy defining permanent naval stations his attention has already been turned to the needs of the Medical Department. That we may not be unprovided in this respect in emergency, he has authorized our efforts with the Red Cross, and we are now beginning the organization of five Red Cross Hospital units (mobile hospitals of 250 beds each, with personnel and equipment complete) that can be called at notice to any point of this coast line where needed.

"9. He has authorized a Medical Reserve Corps, of the best medical talent that our country can furnish, to be ready to come to our assistance in time of need, and to prepare this group of the Naval Medical Corps is initiating a correspondence school that shall give these officers a training and working knowledge of their work when called upon. Realizing the great lesson to be learned from the present European war, he has detailed a number of our best officers for duty in Europe, as observers, and the excellent results already shown in the report of Surgeon Fauntleroy, whose work has added greatly to the professional knowledge of all who are interested in medico-military matters and is a credit to our service.

"10. The above are only a few examples showing the interest and activity of our Secretary in this branch of the service. Did time permit, I should like to continue in detail to show you his interest and help as shown in innumerable questions of sanitation and organization which makes the work of the Medical Department of the Navy one of the most important branches of the service. Our work is most highly specialized, dealing as it does with so many questions, not alone with the healing of diseases, but with all that pertains to the orderly and successful running of this great department of the Government. The work of the Bureau of Medicine and Surgery touches intimately that of every other bureau in the Department and makes us one of the busiest and most active corps.

"I have frequently asked myself how is it that the head of the Navy is so sanely interested in our work, and seems to comprehend our needs often before they are presented to him, and I think the solution lies in the fact of his education along medical lines. This comes, I feel sure, from the association with medical men of great worth and ability. Where has he had this association which has taught him the importance of medical work in the welfare of the nation. From all I can learn, it has come from the intimate friendship and association of his family medical advisers."

The Study of the Internal Secretions.

The increasing appreciation of the glands of internal secretion and their influence upon the etiology as well as the treatment of many common disorders, has made this a subject of unusual interest to many physicians. It has recently been suggested by several American physicians that it might be well to form an *Association for the Study of the Internal Secretions;* and it is desired to know whether there is sufficient interest in this matter to warrant its further consideration.

A few of the prospective advantages of such an association would be: (1) The assembling of those with a fellowship of interest in this special subject; (2) facilitating the exchange of ideas, inquiries and reprints on the internal secretions; (3) enabling those who are interested but do not have the facilities, to be kept in touch with the articles that are appearing on this subject so frequently, but in such scattered and inaccessible periodicals—perhaps a monthly list of these articles with, perhaps, a brief resume of these contents eventually might be prepared; (4) facilitating concerted clinical study of the subject and the measures being brought forward in organotherapy or hormone therapy.

No concerted effort has yet been made to form such an association; but any physicians who are interested and would welcome the establishment of a community of interest embracing some or all of the points just mentioned as well as others which cannot be enumerated for lack of space, are asked to send their names and addresses on a postal card to the undersigned at 715-19 Baker-Detwiler Bldg., Los Angeles, Cal.

HENRY R. HARROWER, M.D.

Dental Hygienists.

A monograph of the Department of Health of the City of New York states that it is safe to assume that not less than ninety per centum (832,500) of school children of the city are in need of dental treatment. It may be said that this situation is due to imperfect tooth structure, the causes of which lie partly at least in prenatal malhygiene, improper feeding of children, lack of cleansing and neglect to prevent progressive decay by early professional treatment. The insidious character of tooth decay and disease is becoming increasingly apparent from the scientific relationships being drawn between oral malhygiene and disease. There are hardly enough licensed dentists to repair the dental ills of the school population alone. This situation, engaging the attention of school hygienists, has directed attention to new means of attacking this problem.

It was apparent that little was to be expected from curative channels in any effective program of action. Prevention is the keynote of modern health work. Inasmuch as the prophylactic principles of dentistry are defined, it was patent that the solution lay in this direction. For some time Dr. Alfred C. Fones of Bridgeport had been successfully experimenting in the use of so-called "dental hygienists" or specially trained women who give surface treatment to the teeth of school children.

Last spring Dr. Philip Van Ingen, chairman of the Committee on Child Hygiene of the Advisory Council of the Health Department of New York, in conference with the Health Commissioner, appointed the following members of the Advisory Council of the Department a committee to study, report and recommend as to the desirability of utilizing dental hygienists in New York: Drs. Herbert L. Wheeler, M. L. Rhein, Homer C. Croscup, Arthur H. Merritt, Henry C. Ferris and Edward F. Brown, as secretary.

The committee advised that a trial of surface cleansing of teeth of school children with accompanying instruction in oral hygiene be commended at the earliest posible moment in one or more centers, preferably public schools, provided that the work be done by specially and adequately trained persons and under the supervision of competent directors, and the whole Committee on Child Hygiene of the Advisory Council ratified the report. It appears probable that at an early date some nurses will be assigned to this work.